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July 24, 1950

STEEL

The Magazine of Metalworking and Metalproducing

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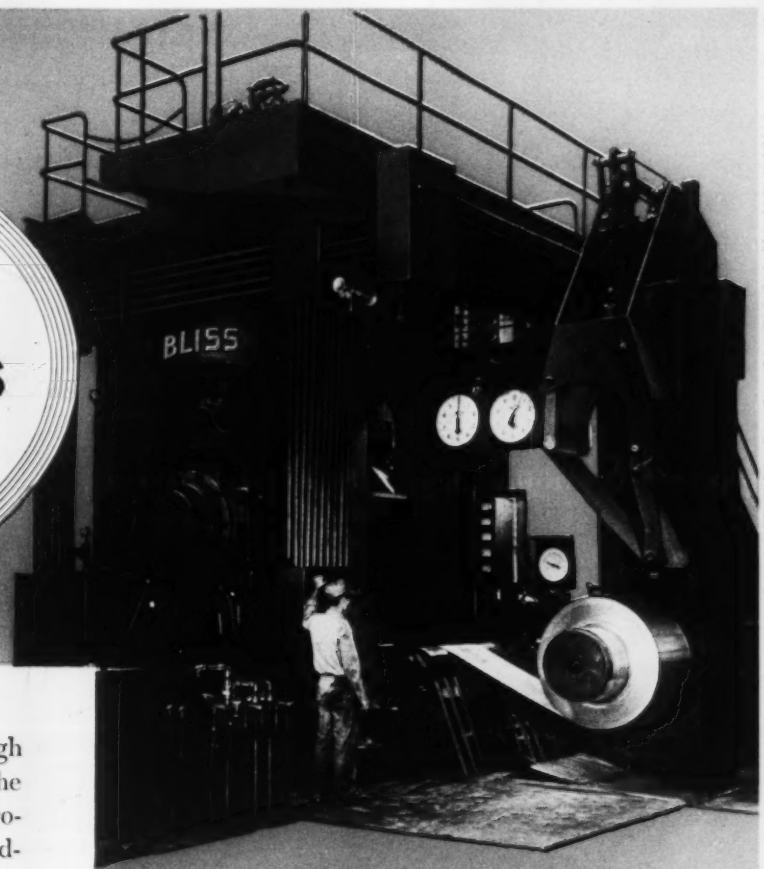
South's Leading Steel Plant Specifies Bliss Again!



This new Bliss temper-pass mill rolls 20-gauge steel at 3,000 f.p.m. It is four high, 21" and 53" x 54".

This four-high temper-pass mill and a two-high sheet and coil mill are the latest additions to the complete array of Bliss rolling mill machinery, producing quality steel and tinplate at the South's leading steel plant.

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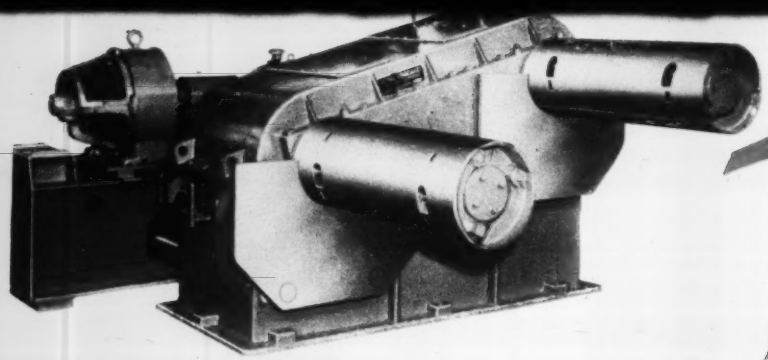
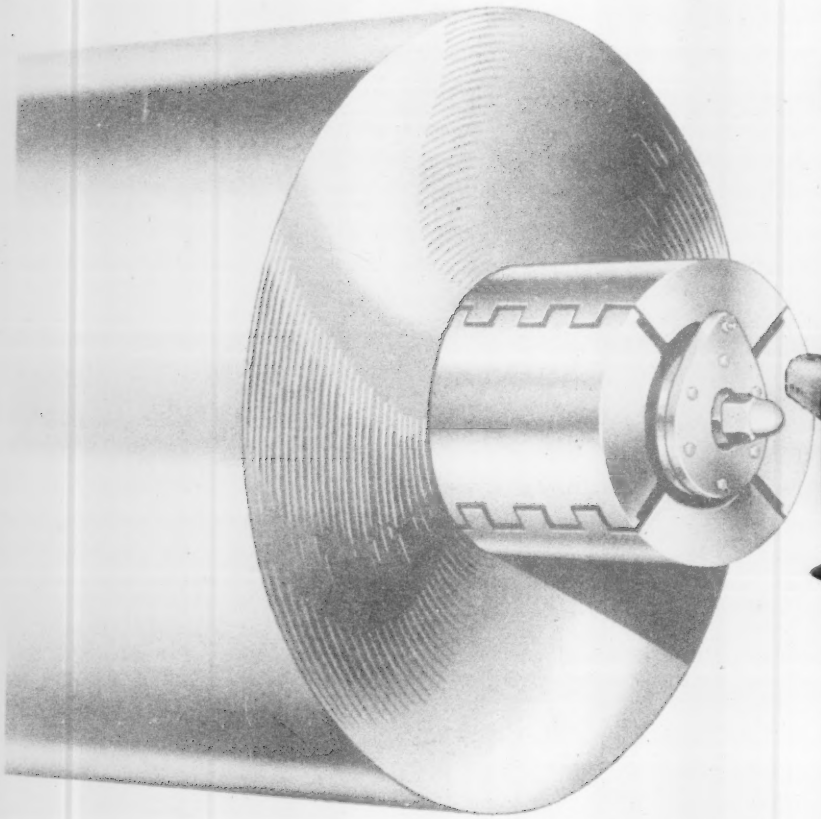
Salem, Ohio

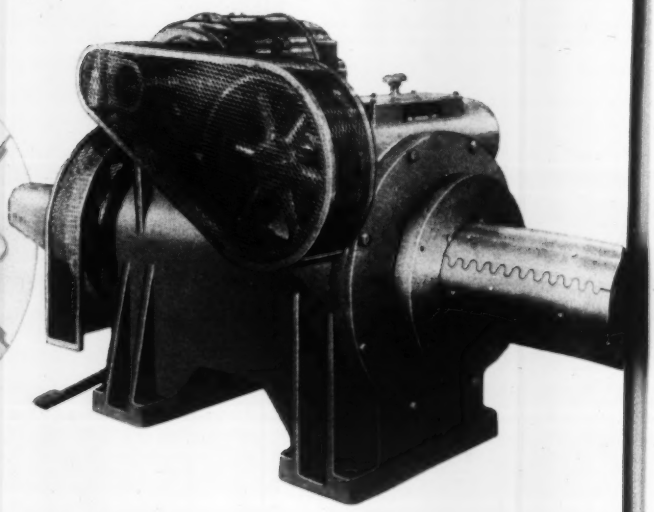


Double drum type tight coiler.

Tension Reels...

REELS FOR ANY SIZE COI





Retractable drum type tight coiler.

Coils in any commercial width or weight can be handled quickly and easily with Aetna Tension Reels. Rigid expansion is maintained without use of links.

With an Aetna-Standard reel you can have either hydraulic or mechanical lift and traverse; air or hydraulic operation for head expansion or stripper. Removable shoes permit handling of wide range of inside diameters. Reels furnished with or without unloading facilities.

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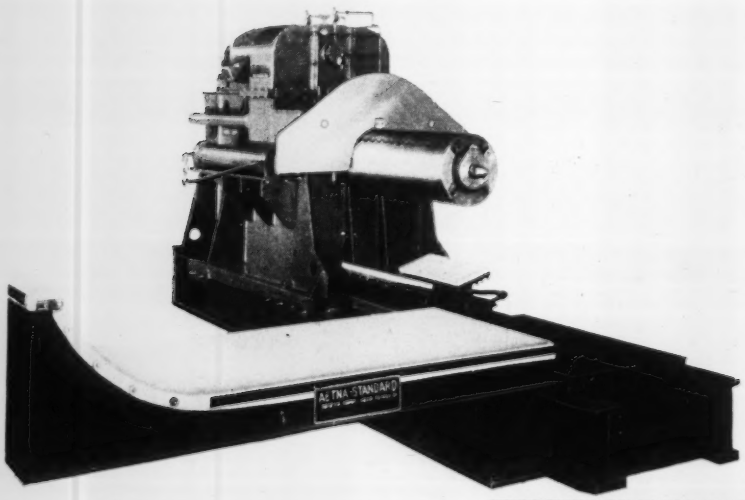

Tension Reel with coil carriage and unloading ramp.

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Behind the Scenes . . .

Man with a Cause

Up on the ninth floor is a bespectacled man inclined to stoutness who is thanking his stars he took some economic courses at Yale ten years ago.

Associate Editor John Morgan says, "The groundwork has come in handy for my graduate work on STEEL." He's been doing the graduate work in the course of getting hipped on the subject of depreciation.

Six months ago Managing Editor Walt Campbell gave him the broad assignment to look into the problem of depreciation and re-equipping in industry. For weeks John interviewed industrial people interested in the subject, talked to bankers about it, button-holed economists and accountants to get some of the abstract thinking on the matter.

He came up with a general review in the May 8 issue of STEEL which has been called "one of the most understandable accounts we've ever seen" by people in industry. The second installment appeared June 19 and outlined an accounting procedure that may help get depreciation reform from Congress.

John has been riding the rails lately to Washington and next week will come up with the third installment of what is developing into STEEL's crusade for depreciation reform. The July 31 article will report on the attitude of administration and congressional leaders toward more liberal depreciation allowances by government for tax purposes. It will report on chances for legislation, who in the administration and congress are in favor and who are against reform, how you can help the cause, how the Korean war is likely to affect the whole matter.

In the months that John has worked on the series, he has become a man with a cause. Watch that glint in his eye. Next week's article and the two that have already been carried are just three in a series that will examine the subject from all angles.

Feminine Fashion Note

In perusing the *Register of Patents*, we have come across a perfect gift for your wife. It's a stay-put adjustable scarf. The scarf has, in the outer edges near each end, inwardly tapered spaced notches to interlock to hold the scarf in adjust position on the wearer. The notched edges of the scarf may be reinforced by securing tabs to the rear of the scarf with registering notches.

There you are, men: The answer to the problem of how to keep your wife from dropping her scarf in dark movie houses or leaving it in taxi cabs.

Behind the News

"All we know is what we read in STEEL," some people in the Defense and other departments are telling Ed Kreutzberg when the Washington editor is working up a story on the status of industrial mobilization plans.

Yes, discount part of that as merely a polite way of saying, "No comment," but the fact remains: Administration spokesmen recognize STEEL is bringing you the news behind the mobilization news every Monday.

Sign of the Times

We note that the fall catalog of Sears, Roebuck & Co. offers a Geiger Counter to aid hunters of uranium deposits. The Sears model is portable, weighs less than two pounds and is battery-operated.

High school youths may now be able to pick up pin money after school hours by getting one of these devices and surveying the back yard. We may even try it ourselves.

Puzzle Corner

Our old friend George Benoit, C. E. Blass of Talon Inc., C. Gardner of Orinoco Mining Co. and somebody who didn't sign his name from Machine Products Corp. in Montreal were the first to send in correct answers to the July 10 problem about the pipes and the vat. The larger pipe clogged, and its flow was shut off 1½ hours.

At 12:00:00 o'clock the three hands of a chronometer equipped with sweep second-hand coincide exactly. At what other time will they exactly coincide? If at no other time, at what time will the three hands be closest to exact coincidence, and what will be the angle of arc between the two outermost hands at this instant?

Shrdlu

(Editorial Index—page 21)

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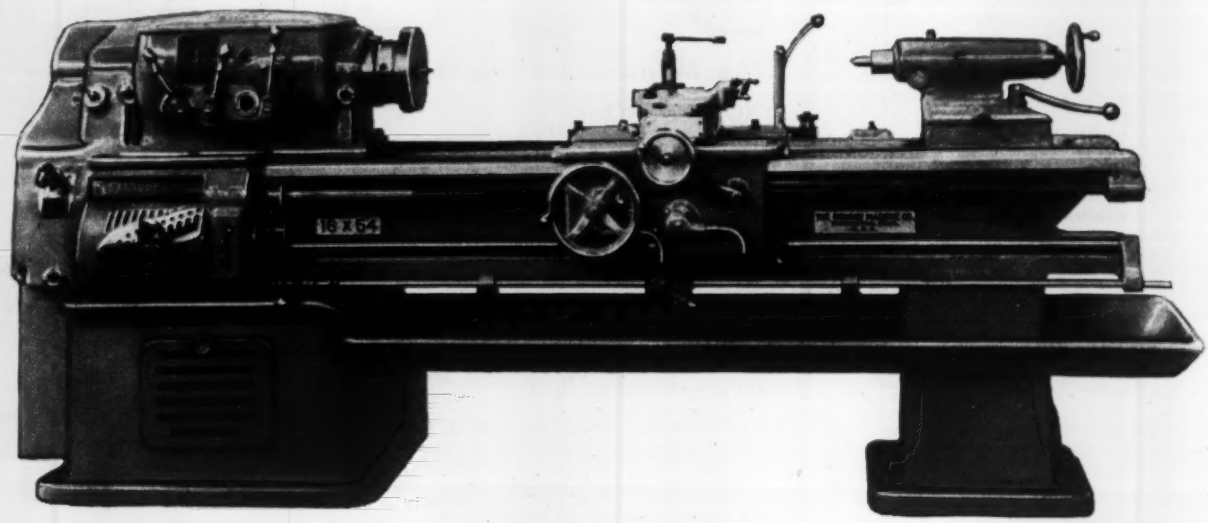
Next Week . . . **What's Washington's Stand on Tax Depreciation Reform?—Third in STEEL'S Series on the Depreciation Problem . . . "Super Machining" Steels Increase Production 100% . . . Answer to Buick Ratchet Problem: "Cut All 15 Teeth Simultaneously"**



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How NICKEL CAST IRONS help machine tool users

Hold down Production Costs

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Solve this problem by using nickel cast iron for induction-hardened and flame-hardened parts of your products or equipment.

Records show that nickel cast iron parts make it possible for tools to retain their initial accuracy much longer than would similar castings of plain iron. The Hendey 16″ x 54″ Toolroom Lathe, shown above, is but one of scores of examples.

The Hendey Machine Company, Torrington, Connecticut, found the induction method best for lathe bed ways that must retain accuracy. Their engineers specify a 1¼ per cent nickel alloy cast iron, induction-hardened to provide a minimum reading of 70 on the Shore scleroscope (about 500 BHN). Distortion never exceeds 0.012″ in a 6-foot length of this nickel cast iron, and the depth of the hardened skin runs as high as 3/32″.

Nickel in cast iron lowers the critical transformation range, thus promoting greater depth of hardness than in plain iron, and minimizing distortion. Moreover, there is gradual blending of the hardened layer into the softer pearlitic interior, whereas in unalloyed iron the transition zone is apt to be completely graphitized and hence extremely weak.

Consult us on the use of nickel alloyed irons to meet your casting requirements. Send us details of your problems today.

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Over the years, International Nickel has accumulated a fund of useful information on the properties, treatment, fabrication and performance of engineering alloy steels, stainless steels, cast irons, brasses, bronzes, nickel silver, cupro-nickel and other alloys containing Nickel. This information is yours for the asking. Write for "List A" of available publications.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

July 24, 1950

Let's Be Realistic!

Last Wednesday President Truman confirmed what all thoughtful persons already had surmised: Our commitments as a result of the invasion of South Korea will have a drastic and prolonged effect upon our personal and business ways of life.

Mr. Truman could not be too specific as to what will be demanded of us. His rough figure of $10 billion as the initial cost and his general outline of desired controls simply mean that we are in for an ordeal similar to that which Winston Churchill aptly described as "blood, sweat and tears."

It is up to all elements of the nation to meet this challenge with chins up and hearts willing. But members of these elements who respond to the call of duty have a right to demand that their servants in Washington who constitute our government conduct themselves in a manner that breeds confidence. Stated more clearly, citizens and corporations have a right to demand that their government be as able and as efficient as is possible.

This right is made realistic by the tragic mistakes of our government servants in World War II. Many experts already have acknowledged and history will record the embarrassing facts that we erred in attacking from Normandy instead of from the Balkans, in demanding unconditional surrender from Germany, in proposing that Germany be reduced to an "agricultural" state, in granting Russia fantastic inducements for her futile entry into the Asiatic war, in loosing the atomic bomb, in our inane occupational policies in Europe and Asia, in our acquiescence to four-way partition of Germany and Austria, in our pursuit of a weak and for a long time wrong policy in regard to China, in our reckless spending for unessentials and in our deplorable neglect of effective national defense.

These constitute a record of bungling that cannot be dismissed lightly. Our servants in government have given us miserable returns for our moral and material contributions. While they have been spending their postwar years damning us, they have been the ones who have made the major mistakes.

Now that we are entering a new difficult period, let us be realistic enough to demand government performance that comes somewhere near matching individual and corporate sacrifice.

* * *

NOW FOR TEAMWORK! President Truman was right when he told the people that we have ample industrial resources with which to meet our present challenge. The metalworking industry, which always plays a major role in an emergency of the kind we face now, in many respects is superior to that which existed at the peak of World War II production.

But good as it is quantitatively and qualitatively, it cannot carry the extra wartime load in addition to its present peacetime load. Therefore, some adjustments must be made to free capacity for emergency needs. Even though we are producing 11 million tons more steel annually right now than we were in the war peak of 1944, we must ease up on the use of steel for unessentials.

Industry recognizes this fact clearly. It is willing and ready to do whatever is necessary to meet the situation. But remembering past experience, it hopes that government will profit from past mistakes. The more quickly industry leaders can be given a clear idea of what will be required and the closer top personnel of gov-

(OVER)

ernment and industry can work together in the early stages of planning, the better will be the end results.

Recently industrial executives have been called to Washington to be interrogated and smeared. Henceforth they should be cordially invited to help. Antagonism of the past should be shelved. The order of the day should be teamwork.

—pp. 29, 30, 31

* * *

FUEL FEATHERBEDDING: Bills induced by Senators O'Mahoney and Myers call for an investigation of the nation's fuel situation. The original objective was to ascertain facts which could be used to formulate a national fuel policy for "peace or war." Now that the Korean situation is before us, the proposed investigation may be urged as a forerunner to possible emergency controls on fuels.

There is dynamite in this proposal. The coal industry is in distress and there is danger that in trying to solve its problems unnecessary hardships may be inflicted upon other fuels — particularly oil and gas. Some legislators are aware of this danger. Senator Morse warns that we must guard against "economic featherbedding" in any fuel industry changes that might result from the investigation. Also we should guard against the constant danger that socialistic-minded persons in Washington will try to use the investigation as a means of bringing the fuel industries nearer to government control or ownership. —p. 36

* * *

CHANGES IN 20 YEARS: According to Detroit Editor A. H. Allen, the public notices the progressive changes in appearance and design of automobiles from year to year but gives little thought to their cumulative effect. He says that if you could place a new model of a 1930 car alongside its 1950 counterpart, you would realize that the changes in 20 years are striking enough to make the earlier design look ludicrous.

Comparison of 1930 and 1950 models emphasizes the shift to streamlined body contours, larger fenders, heavier and bulkier bumpers and bumper-grill assemblies, expanding glass area, larger tires, wider seats and lower roof heights. It would seem that designers have about reached the limits in streamlining, width, length and lowness of roof, so that changes in the next 20 years most likely will be in some other direction. Will they be in power, drive and other mechanical features and in production methods rather than in exterior design? —p. 43

* * *

NOVEL USES FOR WIRE: Letraw Mfg. Co. is a small Chicago company which knits steel and copper wire in tubular form much as stockings are knit. The idea of knitting wire came from a desire to market a better pot cleaner. The first knitting machine was imported from Germany 15 years ago. It was redesigned and now the company builds its own machines. Currently it is operating 55 machines which knit 30,000 pounds of 0.005 to 0.011-inch diameter wire a week.

Knitted flattened wire first was sold as pot cleaners. More recently it has been in demand as the filter element in oil bath air filters and breathers. Still later the discovery was made by accident that knitted wire fabric placed under the rear wheels of an automobile stalled on ice affords immediate, positive traction. So now the company markets 5½ x 27-inch "ice carpets" for automobiles. Perhaps other uses for knitted wire will be found. —p. 65

* * *

TO CUT CYCLE 4 DAYS: Tin plate producers are working toward the development of continuous annealing combined with cleaning as one uninterrupted operation. If their plans work out successfully, the inventory of work-in-process can be reduced appreciably, closer control of physical properties in the strip and in surface conditions may be possible and the complete cleaning and annealing cycle may be reduced to less than two days.

Under present orthodox methods, the cycle of heating and cooling up to the point of removing the inner covers consumes almost four days. Cooling from this point to room temperature for large coils requires as much as two days. Thus about six days are necessary for the entire annealing operation. Reducing the cycle by four days would be a major achievement. This is typical of the steel industry. It requires courage, skill and much money, but it pays off in improved product and lower costs. —p. 72

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

FINGERS CROSSED—GE President C. E. Wilson and Cleveland Industrialist John C. Virden have reportedly been approached by the Commerce Department to head an allocations program. Mr. Virden ran Commerce's Office of Industry Co-operation and administered the voluntary programs in 1948 and 1949. Whoever gets the job will be from industry. Steel will be the first thing allocated and the steel industry is hoping that a voluntary, not a mandatory program will be approved by Congress (p. 29). Steelmen point out that when the OIC's voluntary steel scheme was in force, the plan solved distribution problems even though less than 10 per cent of the total output was allocated. Commerce is drawing up lists of prominent executives who will be asked to serve on industry advisory committees such as those that functioned under the old OIC.

STRAWS IN THE WIND—Here are significant side developments in the nation's new preparedness drive: Sen. A. Willis Robertson (Dem., Va.) wants to boost corporate and personal income taxes ten per cent just as they were raised before World War II (p.29) . . . The phantom order program to speed industrial mobilization is nearly a complete flop, but government agencies will try to salvage something of the plan (p. 29) . . . Fuels probably won't be rationed or allocated for a while, but the administration is taking new interest in Senate proposals to survey the nation's fuel situation (p. 36) . . . The Point 4 plan to aid underdeveloped areas of the world and stop Communist aggression has improved chances of acceptance by Congress (p. 40).

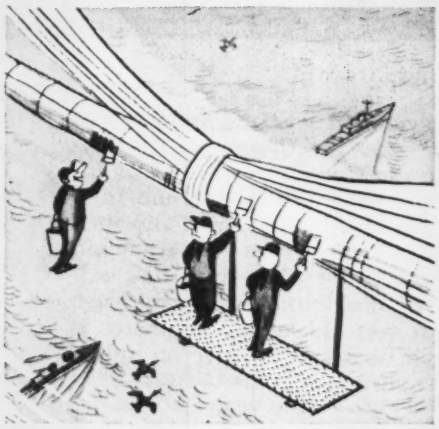
SHIFTING GEARS—Consumer goods production has not slackened and probably won't for weeks or even months to come (pp. 46-49), but output of civilian products of course must eventually be curtailed. Autos and home appliances are likely to be hardest hit. Home building will lag, too. Construction contract awards in June remained at lofty levels. Steel production is nearly at 100 per cent of capacity. Wage and salary payments reached the highest annual rate ever recorded in May. Prices are rising.

GOING UP—War or no war, the steel industry will boost its capacity by 6.4 million tons to about 105,750,000 tons annually by the end of 1952 (p. 31). That expansion is based on peacetime considerations only. Industry may boost the capacity increase to 15 million tons if we get into an all-out war. Our steel capacity rose 14.5 million tons from 1914 to 1918; 14 million tons from 1940 to 1945. U. S. Steel's Carnegie-Illinois Steel Corp. is planning some of the biggest expansions at its Pittsburgh and Chicago district plants. U. S. Steel will also definitely build a steel plant south of Trenton, N. J.

THEY MESH—Follansbee Steel Corp. and Newport Steel Corp. are exploring the possibility of a merger (p. 32). The two companies' facilities along the Ohio river would fit together well. Newport has primary capacity and hot-rolling units; no cold-rolling mills. Follansbee has no primary capacity, but it does have cold-rolling facilities.

ADMISSION—Continental Foundry & Machine Co. is tacitly admitting that steel weldments and steel castings each have advantages over the other in certain applications (p. 33). The maker of steel mill equipment, heavy machinery and castings is opening a weldment division at its East Chicago, Ind., plant.

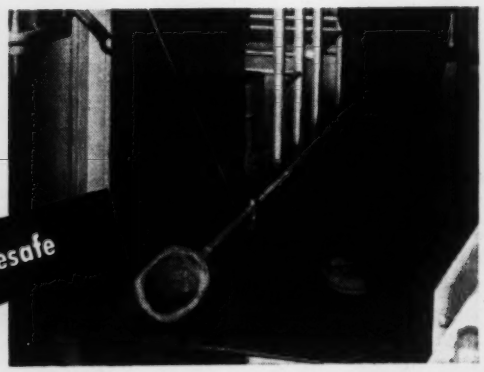
HERE AND THERE IN INDUSTRY—The Commodity Credit Corp. will receive offers this month for grain bins and other storage structures with a capacity of 75 million bushels (p. 36) . . . The Red River Arsenal at Texarkana, Tex., is repairing military equipment for 14 nations (p. 30) . . . Robert C. Sprague of Radio-Television Manufacturers Association says the Korean war will not immediately affect civilian production of television sets (p. 36) . . . Cornell and Purdue will be the scenes this summer of the machine tool industry's sales refresher courses (p. 41) . . . The 1970 model automobile will look different from the 1950 car, but the changes will not be as pronounced as between models of the 1930s and 1950s (p. 43) . . . Aluminum Co. of America is allocating aluminum pig and ingot (p. 104).

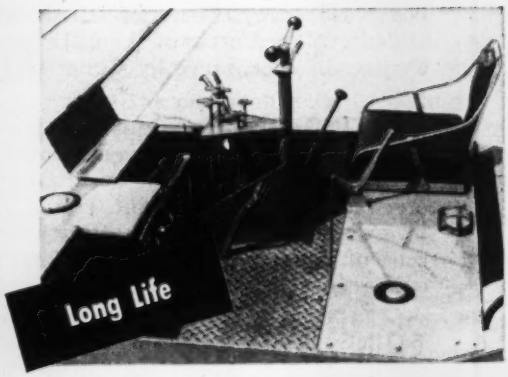


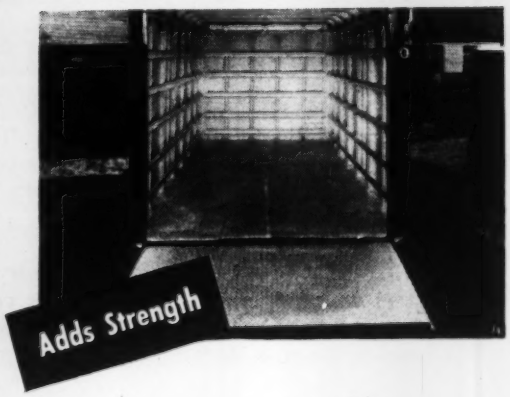
"Wigglesworth certainly has developed confidence since he's been working on this slip-resistant 4-Way Safety Plate."

For greater safety under foot, in your plant and on your products

Inland 4-Way® Safety Plate







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STEEL
A PENTON PUBLICATION

How Severe Will Allocations Be?

The steel industry hopes for a voluntary program similar to the 1948-1949 plan when limited controls solved the distribution problem

PRESIDENT TRUMAN last week sowed the seed for greater government control of industry. The Communist action in Korea will force Congress to water the seed. Will continuing Red threats throughout the world nurture a growth to choke a free economy?

That's the long-range question asked by industry. The short-term query is this: What industrial products will be controlled and how will the restrictions be administered? In his message to Congress, the President mentions steel and building materials as already in short supply. Other materials that soon may be subjected to government restrictions include aluminum and copper. Mr. Truman is vague about the mechanics of allocation.

Lesser of Two Evils—The steel industry wants voluntary allocations, not mandatory. It would welcome voluntary agreements similar to those promulgated under Public Law 395 in 1948 and 1949. Only in case of total war does the industry think mandatory controls would be justified or necessary. Walter S. Tower, president of American Iron & Steel Institute, emphasizes that the postwar voluntary program "really worked."

Congress is expected to favor the voluntary idea and let the Commerce Department administer the program as it did in 1948 and 1949 with its Office of Industry Co-operation. Commerce Secretary Charles Sawyer was the first witness called before the Senate Banking Committee holding hearings on an economic controls bill.

Channeled Distribution—In 1948 and 1949 the OIC—headed for most of its existence by Cleveland industrialist, John C. Virden—handled steel agreements, with steel industry executives serving as an advisory committee. Major programs handled by OIC included plans for freight car builders, the Atomic Energy Commission, grain bins and defense materiel.

The steel allocations program channeled an average of 551,700 tons a month, just 9.7 per cent of the average monthly output of 5,667,000 tons. Although that's a small proportion percentagewise, industry thinks allocated steel could keep steel users operating reasonably smoothly for both national defense and civilian needs.

Who Gets What?—Any manufacturers making anything for the Defense Department would get top priority treatment. Under any voluntary steel program, grain bin manufacturers and freight car builders may be the first to participate. A large program of freight car buying, involving a minimum of 60,000 cars, will be considered at a meeting of members of the Association of American Railroads in Chicago July 28. Approval of such a program would be predicated on assurances that steel would be made available.

Steel allocations could be used in co-ordination with credit curbs that would be aimed at braking automobile and appliance buying. Detroit automakers may be hit the hardest when steel is being redistributed.

NEXT STEP—JETS: Deliveries of a new advanced trainer to prepare Air Force pilots for speedy jet combat craft have been started from North American Aviation's Los Angeles plant. Designated the T-28, the plane has greatly improved performance over previous trainers. The Air Training Command is putting the planes in service at advanced training bases

The Brighter Side—The Truman message had this good news:

No price controls—yet.

No rationing.

No manpower restrictions—yet.

National defense loans are recommended. They would be guaranteed by the government to finance production of "essential materials, products and services."

Authority is urged for long-term government contracts to encourage output of certain materials in short supply.

The Darker Side—House Armed Services Committee Chairman Carl Vinson (Dem., Ga.) says he will insist on a provision requiring all future defense contracts to be subject to renegotiation. Another blow in last week's Washington developments is Mr. Truman's request for higher taxes.

Higher Taxes Coming

Though he offered no details, the President promised he would soon submit a new tax program with three objectives: To finance a large part of the increased expenditures; to aid in "offsetting inflationary pressures"; and to aim at "elimination of profiteering."

The administration is probably planning a new excess profits tax on corporate income and higher individual income taxes to curtail spending. One straw in the wind: Sen. A. Willis Robertson (Dem., Va.) proposes adding 10 per cent to the tax bills of all individuals and corporations.

The Korean war has scotched any hope of relief on excise taxes in this session of Congress. If there had been no Asian outbreak, chances are there would have been some reform.

Phantom Orders Fade

The phantom order program to speed industrial mobilization is proving to be only a shadow of what was expected. It may help in America's rearming, but not much.

The National Security Resources Board originally had worked out a program with the machine tool industry whereby ghost orders were placed with companies who would look the orders over, modify their plant layouts to produce the machines needed and be ready on a stand-by basis if an emergency arose so that they could start producing within a

short time of notification by the proper federal agency. The program is a flop because:

1. NSRB didn't follow through; it had no chairman for months and even yet is bickering with other agencies on who has authority over what.

2. Funds to finance the program and provide the cash for machine tool builders to convert were never voted. Presumably, the Reconstruction Finance Corp. was to handle the financing end. It hasn't the money.

3. The NSRB confusion and lack of financing plans discouraged industry. The orders are simply gathering dust in its files.

The machine tool program was a trial run. The various branches of the Defense Department, particularly the Air Force, also had similar programs. The Air Materiel Command's Industrial Planning Division at Dayton, O., says its scheme is in better shape for air force equipment. But lack of financing here, too, is also a bottleneck.

U. S. To Hire 100,000

Defense agencies expect to hire about 100,000 new civilian employees in coming months.

New regulations place the Defense Department on an "emergency indefinite" hiring system. New employees will be given appointments until at least 1952. Of the 100,000 to be hired, 15,000 to 20,000 will get jobs in Washington.

Total federal, state and local government employment for April, 1950 —the latest month for which figures are available—reached a new postwar high of 6,358,000. Public wage and salary payments for April, 1950, totaled $1422 million.

Prudential To Lease Box Cars

Prudential Insurance Co. of America and General American-Evans Co. will join in a $1 billion plan to build up to 100,000 new box cars. General American-Evans is a box car building subsidiary of General American Transportation Corp.

These eight railroads already have agreed to lease the new box cars: Pennsylvania, Burlington, Nickel Plate, North Western, Wabash, Southern Pacific, Boston & Maine and Gulf, Mobile & Ohio.

Coke May Be Bottleneck

Steel industry executives are more worried about shortages of metallurgical coke and pig iron than iron ore or scrap. During World War II, blast furnace capacity increased at a far faster rate than coke oven capacity. Pig shortages loom because of the coke scarcity.

There's not much worry about scrap because so much industrial scrap is now being generated. Despite the loss of Russia as a source of manganese, the nation has about two years' supply on hand.

In the case of total war, the steel industry itself can switch over to war production within a week.

Reeves Increases Output

Reeves Instrument Corp., New York, a subsidiary of Claude Neon Inc., has gone on double shift to take care of more than $10 million in orders for technical electronic and armament material for the Armed Forces.

Navy Speeds Yard Work

At its Puget Sound, Wash., yard, the Navy is speeding the $43 million modernization of the carrier Essex. The flattop Esperances is just out of the "mothball fleet" and is being activated.

Boeing Seeks Machinists

Boeing Airplane Co. seeks 100 skilled machinists for its Seattle plant because of increased fabrication and subassembly work. Employment cutbacks that were planned are being postponed.

Shipyards Come to Life

The West Coast's long-dormant shipyards have come to life as a result of Korean war. Reconditioning of merchant vessels from the "mothball fleet" is underway and even greater activity is probable.

In the San Francisco bay area, only three commercial shipyards are available for ship reconstruction; other units of the World War II shipyard capacity have long since been dismantled.

Biggest of the existing yards is Bethlehem Steel Corp.'s installation in San Francisco. Currently it is overhauling three vessels. Bethlehem has added 500 employees and is operating three shifts daily, seven days a week.

Initial contracts for overhaul of three other "mothballed" ships have been awarded to yards on the east shore of San Francisco bay. The Todd shipyard in Alameda will work on two and the other will go to the Moore Drydock Co. in Oakland.

Current plans also call for removal of ten other vessels from laid-up fleets in Oregon and Washington. Refitting work on these will be handled by shipyards in the northwestern states.

No federal program for new ship construction is yet in sight. Industry sources estimate that 100 to 125 private ships have been "inactive" and available for charter in the past six months.

Vital Links Forged in Uncle Sam's Workshop

PROCESSING and repairing fighting equipment for 14 nations, including hard-pressed Korea is the job of the giant Red River Arsenal at Texarkana, Tex.

Vehicles of every kind — Jeeps, tanks, tractors, trucks and big mobile guns—were stored as they came from the battlefronts at the end of the last war. Now the sprawling deposit of equipment is the big assignment for workmen who must make it good as new. The equipment is then shipped to Belgium, Denmark, France, Italy, Luxemburg, Netherlands, Norway, United Kingdom, Greece, Turkey, Iran, Korea, Philippines and a general area of China.

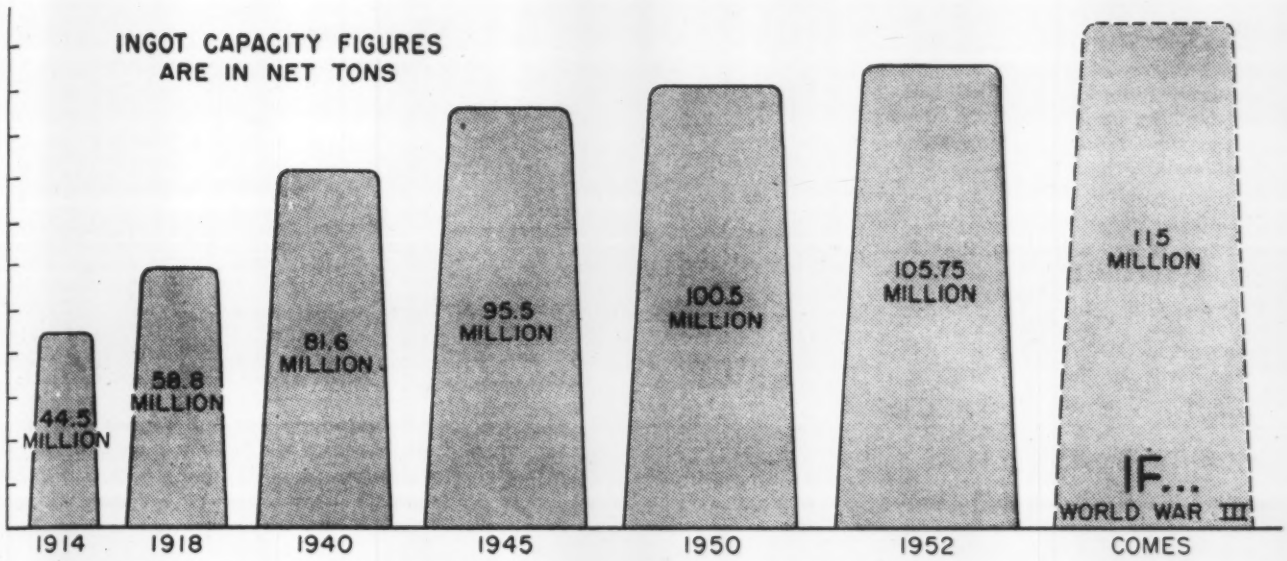
The operations at the arsenal are supervised by the U. S. Army Ordnance Department as one of the numerous activities carried out under the defense assistance program. A congressional appropriation of $1314 million finances the program of preparing equipment for service in the outposts of democracy.

In the photo, a welder works on a tank along the repair line that is proving again and again that most equipment can be repaired at little expense. Since the manufacture of many types of vehicles under repair is not being continued, it is often necessary for the arsenal to make parts needed for satisfactory repair jobs.

RED RIVER ARSENAL
. . . they make it as good as new

Requisite for Victory: 115 Million Tons of Steel?

. . . we'd need that much in a World War III if pattern of other wars is repeated



Steel Capacity in U. S. Hits New High

It's now 100,563,500 tons and expansions expected to be completed by end of 1952 will raise it to 105,750,000 tons. War needs might swell it to 115 million tons

HAVING TROUBLE getting the steel you need? Don't pin your hopes on a drop in steel demand to make it easier to get all the tonnage you want!

The steel industry doesn't think there'll be much of a drop; in fact it apparently is looking for a further increase in demand; in prospect for completion by the end of 1952 is enough expansion to boost the nation's steelmaking capacity 6,363,000 net tons over what it was on Jan. 1, 1950.

This will hoist the industry's capacity to an alltime high of about 105,750,000 net tons annually (see accompanying chart) and will represent one of the largest expansion programs ever undertaken by the steel companies in the United States, the American Iron & Steel Institute points out.

Over 100 Million Tons Now—The industry's capacity passed the 100-million-ton mark for the first time in history on July 1, 1950. On that date the capacity was 100,563,500 tons of steel for ingots and castings, the result of an increase of 1,170,700 tons during the first half of this year.

Output from steelmaking furnaces in this country, operated at capacity for one year, would now be about 13.6 million tons more than the steel made last year in all the rest of the world, says the institute's report.

11 Million Tons Above Wartime Peak — The Korean situation finds the United States with a steel industry producing at a rate of 11 million tons more in a year that the industry was required to produce in 1944, the biggest steel production year in World War II.

Expansion of the nation's steelmaking capacity has helped make possible a record high output of steel in recent months. In May, for example, steel production was at an annual rate of more than 100 million tons.

Expansion for Peace—The 6,363,-000-ton increase now being made to capacity does not arise from war fears. It was planned well before the Korean situation arose and therefore springs from anticipated needs of a peacetime economy. The steel industry is well aware of the nation's population increase and the increased per capita usage of steel. Embarkment on such an expansion program is evidence the steel industry was confident metalworking companies and other steel consumers would continue to exert heavy demand for steel. This would be in line with the thinking of more than half of the metalworking executives answering STEEL's mid-1950 poll on business outlook. In that survey 53.2 per cent said they expect business to continue to improve over the next five years (see STEEL, July 2, p. 55).

Cocked Hat — If all planning for peacetime production is knocked into a cocked hat by World War III there may be need for an even greater steel capacity, if the pattern of World Wars I and II is repeated.

In World War I the nation's steel capacity rose 14.5 million tons from 1914 to 1918; in World War II it rose 14 million tons from 1940 to 1945. Duplication of this pattern might mean the nation's steelmaking capacity would rise to 115 million tons (see the chart) in a World III.

U.S. Steel Boosts Capacity

Will add 1,660,000 tons at Pittsburgh and Chicago district plants. Work starts at once

AMONG steel companies increasing their steelmaking capacities is United States Steel Corp.

It will increase its ingot capacity 1,660,000 net tons through an improvement program to be instituted at the Pittsburgh and Chicago district plants of Carnegie-Illinois Steel Corp., its principal steelmaking subsidiary.

The new program, says Irving S. Olds, chairman of U. S. Steel Corp., will be pushed to completion as rapidly as possible, and should result in an increase of 1,215,000 tons in the annual steel capacity of U. S. Steel. At the end of December, 1949, its capacity was 32 million tons.

The remainder of the program, now in the engineering stage, will make an additional 445,000 tons of

annual productive ingot capacity available by the fall of 1951.

Major part of the expansion program will get under way at once. The work will not interfere with existing steel program, Mr. Olds says.

Because it is a program solely of improvement of existing facilities, the expansion can be completed in about half the time required for construction of entirely new facilities.

Plants whose steel capacity is to be increased under this program are Gary and South Works in the Chicago district, and Homestead, Edgar Thomson, Clairton, Duquesne and Ohio Works (Youngstown) in the Pittsburgh district. Two-thirds of the increase will be in the Pittsburgh area, one-third in the Chicago area.

To Start Trenton Mill in 1951

United States Steel Corp.'s expansion plans call for starting construction in 1951 of its new eastern mill (see STEEL, Jan. 2, p. 306, Feb. 6, p. 55, and June 12, p. 62).

The integrated mill to be located on a 3800-acre site the corporation bought on the Delaware river south of Trenton, N. J., will have a capacity of at least 700,000 tons annually.

While that capacity is only one-eighth to one-sixth the capacities of some of the corporation's other steel plants it is larger than the capacities of half of the companies in the steel industry. The biggest Eastern Seaboard steel producer—Bethlehem Steel Co.'s plant at Sparrows Point, Md.—has a capacity of 4.8 million tons.

Scrap Men Ask Lower Rates

Formal action to obtain lower freight rates on iron and steel scrap may be taken by the scrap industry if negotiations with the railroads for voluntary reduction are unsuccessful.

Lower rates on scrap will be particularly timely, says Edwin C. Barringer, executive vice president, Institute of Scrap Iron & Steel, on account of the apparent heavy requirements of scrap for defense.

"The needs of steel mills and foundries for purchased scrap can be met only if the scrap resources of remote areas, especially the Southwest and Southeast, can be tapped," says Mr. Barringer. "The tonnage that will move on such long hauls should more than requite the carriers for more reasonable rates."

On the shorter hauls in the North, practically all rates on scrap are now out of line with those on finished steel, especially since the recent reduction in rates on the latter. In some cases, high grade sheets are moving on a lower freight rate than the scrap that went into them.

NEA

DOWN IN THE VALLEY: Chile's great Chuquicamata open-pit copper mine, the world's largest known copper ore deposit, is one of the main sources with which Chile means to meet any of the copper demands coming from the U. S. Chile now supplies about 35 per cent of American requirements. If the measure that the House of Representatives is sponsoring passes, the two-cents-per-pound copper import tax will be suspended

Follansbee and Newport Talking Merger

MERGER of Follansbee Steel Corp. and Newport Steel Corp. is being considered, STEEL learned from the heads of those companies.

Tying of the two companies together would permit each to complement the operations of the other: Follansbee has only cold-rolling capacity; it does not own a source of steel. Newport has pig iron capacity, steel ingot capacity, and hot-rolling capacity; no cold-rolling capacity.

Cheap Transportation—Follansbee's plant is located at Follansbee, W. Va., on the Ohio river, about two miles south of Steubenville, O. The company's headquarters are in Pittsburgh.

Newport Steel Corp.'s blast furnace is at Martins Ferry, O., on the Ohio river, about 20 miles downstream from Follansbee, W. Va. Newport Steel's steelmaking furnaces and hot-rolling mill are in Newport, Ky., adjacent to Cincinnati and about 300 miles downstream from Follansbee.

Use of low-cost river transportation of materials between the plants is a factor being studied in connection with the exploratory talks.

Blast at Martins Ferry—Newport Steel's blast furnace at Martins Ferry has not been operating for a year and the company would consider selling it. The stack has an annual pig iron capacity of 144,000 net tons. It has been relined and could be put back into blast at once. In the last year Newport Steel, with almost half its steelmaking capacity in electric furnaces, has not seen fit economically to make what basic iron it needs for its open hearths; instead it has been purchasing its iron requirements. Newport's three electric furnaces have a total steelmaking capacity of 30,000 tons a month; its seven open hearths have a monthly capacity of 35,000 tons. The electric furnaces are new: They came into operation in the last two years.

Ingot to Coil in Six Minutes—In a multimillion dollar rehabilitation and expansion program Newport Steel in 1949 completed installation of a rolling mill plant capable of processing 60,000 tons of ingots monthly on a 15 turn-per-week basis. This continuous hot-strip mill rolls from ingot to a finished coil in about 6 minutes without any intermediate reheating.

Present owners of Newport Steel Corp.'s works at Newport purchased it in August, 1946, from the Andrews Steel Co. The purchasing company was known as International Detrola Corp. It made the purchase to obtain a source of sufficient steel to sustain output of its many metal products. In April, 1947, International Detrola bought the blast furnace at Martins Ferry from Wheeling Steel Corp.

When company officials realized that nearly half of its business was coming from steel, International Detrola's name was changed February, 1949, to Newport Steel Corp. General office of Newport Steel is at Newport, Ky.; executive office is in New York. C. R. Feldmann is chairman and president.

Follansbee has capacity to cold roll 180,000 tons of strip a year. President of Follansbee Steel Corp. is Marcus A. Follansbee.

Opens Weldment Division

Continental Foundry & Machine out to prove castings and weldments each have advantages

SOME diehards will never admit it, but steel weldments and steel castings each have advantages over the other in certain applications. Continental Foundry & Machine Co. recognized this fact last week by opening a weldment division at the East Chicago plant. After 40-plus years the steel mill equipment and heavy machinery firm adds commercial welding to its production setup.

Housed in the war-built structure in which Continental produced cast armor and which it bought from the government a year ago, the division is fast ridding itself of foundry paraphernalia. Stacks of huge flasks will be removed to make room for steel storage in a partially covered yard. However, since the facility comes under the national security clause its three open hearths will be kept intact.

Casting Continued — Continental people are quick to point out that the weldment division will in no way limit steel castings output. It will allow them to make in their own shops castings, plate fabrications and combinations of both for themselves and for commercial customers.

Impressive evidence of what the addition means already is present in the new shop. A plate bending roll, for example, in the heavy fabrication section of the shop makes major use of Continental-built weldments.

Continental also has two cast steel bending rolls, an innovation which the company expects will prove its contention that castings will do a job previously delegated to forgings. This bending roll, incidentally, is regarded as the fourth largest in the world. It will bend 14 foot wide 2 inch thick plate cold to an inside diameter of 42 inches in one pass.

Big Squeeze—A 385,000 pound Verson press brake, said to be the world's largest, towers over the shears and other equipment in the heavy end of the shop. Nominally rated at 1000-ton capacity it has been found to exert 1200 tons of pressure and its operators believe it can deliver 1500. This brake will handle 16-foot plate between the two housings and 20-foot plate in restricted lengths. A 90-degree crimp was put in 2-inch thick hot plate in trial runs with little difficulty.

Latest in automatic electronically guided flame cutting machines, and in punches, shears and presses are included in the two-section shop. One section is devoted entirely to ½ inch and lighter plate fabrication. The welding layout includes three 10-ton electrically operated welding positioners. A fully automatic submerged arc welding machine with possible movement of its welding head through a 270-degree arc can make weld deposits of 25 to 30 pounds per hour. Stress relieving furnaces and crane capacity aplenty serve the facility.

New Fields Opened—With the weldment division functioning, new fields are opened up for Continental. Formed and welded units for the chemical, refining and electrical industries and others not previously served will be their meat now. With a complete engineering department, three steel foundries, extensive machine shop facilities, x-ray labs, and the weldment division the company thinks its position is tremendously improved.

GRINDING AWAY IN SCHOOL: Norton Co., Worcester, Mass., has a new and fully equipped grinding school, Norton School of Grinding. Staffed by Norton men, it teaches the theoretical and practical approaches to uses of abrasives and the art of grinding, to the company's sales trainees and plant supervisory personnel, to customer personnel and to instructors in grinding from engineering, trade and vocational schools. Here, Instructor K. L. Bates demonstrates surface grinding on a Norton 6 x 18 Surface Grinder to distributor trainees

Slabbing Mill to Yugoslavia

A blooming-slabbing mill embodying many of the innovations which make McLouth Steel Corp.'s installation—(STEEL, July 17, p. 62)—unique, is being assembled by Continental at East Chicago. The mill will be used in Yugoslavia. Shipment is scheduled for July 29.

Another Half Million Hotpoints

James J. Nance, president of Hotpoint Inc., says the capacity of the refrigerator factory at Cicero, Ill.—now one-third complete—will be about 500,000 refrigerators annually.

The building, which will be about 600 x 600 feet, parallels the company's new range plant located on a 21-acre site to the east of the refrigerator plant. Because of specially designed presses, the main manufacturing building in the refrigerator plant will be 40 feet high.

Mack Unveils Model A Truck

Mack Trucks Inc., New York, unveiled its new line of Golden Anniversary model A trucks. All completely Mack-built, the Mack mid-century models have a new engine to power them, Mack's Magnadyne.

The anniversary models range in size from 17,000 pounds for medium duty hauling to 40,000 pounds in the tractor-semitrailer model for heavy duty highway work. E. D. Bransome, president of the firm, says: "Our Golden Anniversary A models and the Magnadyne engine were designed to meet the needs of truck users who want small, popular-size trucks that are Macks. One of the most important features of our new Magnadyne engine is that it needs no breaking-in. They're precision built engines, tested in our plant. After engine testing, the engines are completely torn down and rebuilt."

Gradall Moves from Cleveland

Manufacture of the Gradall, multi-purpose earthmover, is being transferred from the Cleveland plant of Warner & Swasey Co. to a plant being leased by the company in New Philadelphia, O.

A separate Gradall Division, the company thinks, will permit more economical production of the machine, and will simplify the planned doubling of the firm's 1951 production schedules.

The Gradall, one of several postwar products selected by the company to supplement its standard machine tool line and utilize war-expanded capacity, is being turned out at a 20-to-30-a-month clip. The New Philadelphia plant, formerly occupied by American Sheet & Tin Plate, is being remodeled and will be in full production by mid-August. At first about 250 men will be employed.

Australia Gets Universal Joints

Universal joints, as built in the U. S. by Mechanics Universal Joint Division of Borg-Warner Corp., soon will be manufactured in Australia by Repco Ltd., Melbourne.

The move is a step toward making the Australian automotive industry self-dependent, say D. E. Callinan, director of Repco, and J. W. DeLind Jr., president of Borg-Warner International Corp.

Universal joints will be made under license granted to Borg-Warner International.

A new division of Repco—Repco Mechanics Proprietary Ltd.—will be created and a new plant erected or leased in Melbourne, says Mr. Callinan.

The new division will produce universal joints for Australian-made passenger cars and trucks and for earth-moving machinery, farm implements and general industrial uses.

Eastern Stainless Uses Gas

Now that gas is newly available to the Baltimore area, Eastern Stainless Steel Corp. converted all its metal heating and annealing facilities to the use of the fuel, says John M. Curley, chairman and president.

The fuel will be used in the roughing mill where stainless bars are heated for rolling into heavy sheets; in the finishing mill where sheets are reduced in thickness; and in the annealing furnaces where finished sheets receive a final tempering.

R. R. Boom Boosts Employment

Youngstown Steel Door Co., Youngstown, boosted employment by about 200 workers to a 900 total in the last 30 days. E. C. Hoelzle, plant manager, says this was made necessary by a large increase in railroad orders for car sides and doors.

NUT TAPPERS: Back-tiring hand-shoveling is eliminated by a unique arrangement of overhead stock bins in a new battery of 12 automatic nut tappers now in operation at the Los Angeles bolt and nut plant of Bethlehem Pacific Coast Steel Corp., Los Angeles. Charged by the shop overhead crane, the bins provide the automatic tappers with a supply of untapped nuts lasting from one day in the 7/8-inch size to a week for the smaller sizes

Thomas Sees Capacity Operation

Full operations by Thomas Steel Co. plant at Warren, O., through 1950 are predicted by President E. M. Barber.

$1 Million Coke Program

The Donner-Hanna Coke Corp. of Buffalo announces a $1 million coke-oven building program, first step in a modernization and rehabilitation program to keep the company's output at record levels. Thirty-six new small coke ovens will be erected at the plant.

Erie Forge & Steel Sold

Erie Forge Co. of Delaware concluded the purchase of the Erie Forge & Steel Co., Erie, Pa., for $4.5 million. Emil H. Lang continues as president of both companies.

National Bronze Taken Over

Alloy Precision Castings Co., Cleveland, asumed all precision castings operations under the Mercast license that were being performed by National Bronze & Aluminum Foundry Co., Cleveland.

The action took place the first of the month. The new company, headed by David Thomson of Haverford, Pa., bought the precision casting business, facilities and license rights of National Bronze. Additional working capital and operational experience was provided by the new management. Alloy Precision will continue to operate at the National Bronze location in Cleveland.

Mr. William I. Neimeyer, president of National Bronze, is vice president of the new company and heads the sales program.

Whiting Reorganizes, Expands

Whiting Corp., Harvey, Ill., for over 60 years a producer of industrial equipment and machinery, set up a new distributing policy for its merchandise sales division, Stevens H. Hammond, president, says.

The division was organized in the spring of 1949 and managed by A. E. Bottenfield. In the past year the division's line of materials handling equipment was completely reorganized and expanded to include electric chain hoists, package and bulk material conveyor systems, overhead monorail and light crane systems and hoist-type cranes.

Twelve sales territories were organized, and under the current distributing policy, Whiting materials handling equipment distributors are being appointed. They will be selected mainly from among industrial distributors, hardware wholesalers and automotive equipment jobbers.

Quiet, Please

The nation's experts on noise will get together Oct. 20 at Armour Research Foundation of Illinois Institute of Technology to talk about excess decibels and how to get rid of them.

About 300 persons are expected to talk down noise at a National Noise Abatement Symposium where they will hear talks on the effects, measurement and control of all kinds of noise. Joint sponsors: National Noise Abatement Council and Armour Research Foundation.

The meeting will follow a two-day Shock and Vibration Symposium at which representatives of the armed forces, universities, industrial laboratories and common carrier organizations will talk about the various methods of measuring shock and vibration.

Dr. Haldon A. Leedy, director of the Armour foundation, is chairman of the program committee for the symposium.

Swiss Family Wiss Cuts Neat Metalworking Pattern

FEW FIRMS can boast they are the oldest and the largest of their kind. But J. Wiss & Sons Co., producer of shears and scissors in Newark, N. J., does.

Wiss was founded in 1848 by Jacob Wiss, a Swiss immigrant. Still owned and operated by the Wiss family, the 102-year-old firm continues to cut a neat pattern in its metalworking activity.

From the beginning Jacob Wiss put into his business the careful skill and precision characteristic of the Swiss.

Today amid the highpowered tempo of modern machinery, shear, scissor and tin snip blades sing as they are hand-honed to perfection. At the end of a production system that starts with drop forges geared to mass production, stand craftsmen with hand files and fine grinding stones.

Wiss uses Jones & Laughlin Jalloy, a new alloy steel, to produce the shears it makes.

CRAFTSMEN have harnessed modern mass-production methods at Wiss. The manufacture of pruning shears begins when shear bades are blanked from Jalloy sheet on this machine designed for mass output. At the other end of the production line the shears are hand-finished

TOLERANCE of one one-thousandth of an inch is the limit when the holding bolt is fitted in the pruning shears. Here, a shear hole is being reamed to insure a snug joint. Accuracy insures that the upper blade of the shear will meet the lower blade with precision

CUTTING EDGE of the pruning shear is carefully hand-honed on a rough stone and a fine finishing stone to make it razor sharp. Workmen carefully finish each shear by hand

ANVIL is hand-filed to make upper blade meet anvil evenly at all points. Shear thus gets high efficiency

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Two proposals pending before the Senate may have a lot to do with how our fuels will be controlled in case the Korean war lasts for a long time

FOLLOW closely the course of two proposals now before the Senate that may have a lot to do with how the nation's fuels will be controlled in case the Korean war gets worse.

In neither S. 3215 introduced by Sen. Joseph C. O'Mahoney (Dem., Wyo.) nor in S. R. 239 introduced by Sen. Francis J. Myers (Dem., Pa.) is there a word about control for both were conceived before the Reds started fighting in Korea. But both call for an investigation of America's fuel situation, an investigation that could easily turn in recommendations for controls.

New Look—Neither measure got much more than a yawn from the administration until things popped in Korea. On July 13 Secretary of the Interior Oscar L. Chapman appeared before the Senate Committee on Interior & Insular Affairs and in nine pages of testimony plumped for both proposals. Between the lines of his remarks, you can hear: "These measures may come in handy for industrial mobilization."

Senator O'Mahoney's S. 3215 would establish a commission to investigate the coal industry, its economic health and its relationship to the economy and security of the nation. The commission, members of which would be selected by Congress and the President, would report to the President and Congress its proposals for action by the government.

Double Look—Secretary Chapman thinks the O'Mahoney bill should be considered in conjunction with Senator Myers' proposal that deals with all fuel resources, not just coal alone. Senator Myers wants a full investigation that could evolve a national fuel policy for "peace or war." Considered together, says Secretary Chapman, "these bills provide a framework of inquiry which is indispensable" in view of the Korean situation.

The Interior Department is taking a greater interest in fuel substitution, a far cry from the concern felt only a few months ago when administration people were wondering what to do if coal stocks got too high.

Fuel Displacement—Interior Department studies show that perhaps as much as 90 per cent of our total energy supplies are consumed in uses where substitution among at least some of the primary energy sources is possible. The only significant uses in which substitution is not now feasible are gasoline for motor transportation and aircraft, coking coal for blast furnaces and natural gas for carbon black and glass manufacture.

A study of all fuels, such as planned in the Myers proposal, would be a godsend to Interior's substitution program.

Military Not Affecting TV Output

Immediate needs for electronic equipment and components by the military, though not yet disclosed, probably will not affect the radio-television industry.

Informal estimates indicate that requirements for the Korean conflict can be met by the industry without serious cutbacks in the booming industry. Civilian production should not be affected.

Overall requirements for Korea are not expected to exceed 20 per cent of the industry's output and may be only 10 to 15 per cent, the Radio-Television Manufacturers Association was told when military and civilian officials met last week with President Robert C. Sprague of RTMA. Further conferences will be held as the needs of the military crystallize.

Mr. Sprague thinks the industry is far better prepared for an allout emergency today than it was at the outbreak of the last war. Why? Because of the rapid expansion of the radio-television industry, particularly in the component field.

Wide World

DARK HORSE: Because they thought the President was going to appoint Sumner T. Pike permanent chairman of the Atomic Energy Commission, four Republicans and one conservative Democrat recommended in committee that Mr. Pike not be confirmed for a new term as an AEC commissioner. The Senate confirmed him nonetheless. Then the President named Gordon Dean permanent chairman. Here he is after seeing the President

CCC Wants Grain Bins

The Commodity Credit Corp. of the Department of Agriculture will receive offers this month for about 75 million bushels capacity of bins and other temporary storage structures that may be needed to store grain that the corporation will acquire later this year.

The quantity accepted under the offers will depend upon developments in the next few weeks, and the apparent need for additional temporary storage facilities later this year. Officials of CCC say that it is necessary to get offers in now to be in position to place orders for the facilities which may be needed.

The anticipated need for more storage capacity is in the heavy grain producing areas, chiefly Ohio, Indiana, Illinois, Iowa, Missouri, Nebraska, South Dakota and Minnesota.

Manufacturers wishing to make offers on storage structures may obtain the general specifications from the Director, Transportation & Warehousing Branch, Production & Marketing Administration, Room 1096, South Building, Department of Agriculture, Washington 25. All offers must be received by the director not later than 5 p.m., July 31.

Business Nearly as Usual

Business is nearly as usual in Washington.

Hotels are not excessively crowded; you don't have to stand in line to get a table in a restaurant as you did during the war. Telephone, telegraph and teletype communications lines are not jammed. Plane and rail accommodations from the capital city are

easily obtained. Taxis are as numerous as ever.

When a cab driver was asked if he had noticed any unusual uproar in the city because of Korea, he said, "Unusual? Hell, no, but this town's always in an uproar."

Benzene Is in Short Supply

Current shortages and increasing needs for benzene and phenol induced the Bureau of Mines to start looking into these and other chemicals available in producing synthetic liquid fuels from coal and oil shale, Director James Boyd says.

The major objective of the study, in which the National Security Resources Board expressed an interest, is to determine the most desirable processes for producing chemicals in conjunction with synthetic fuels. Potential benefits would include: A new source for those chemicals in short supply or expected to be scarce in case of an emergency; a supplementary source of aromatics or other special fuel components needed by the armed forces; reduction of the cost of synthetic liquid fuels by the co-production and sale of chemicals.

Even now in short supply, benzene is becoming more important as a basic raw material. Its use in such products as synthetic rubber, plastics, nylon and detergents readily account for the sharp increase in demand in the last decade. Until recently benzene was available only as a co-product in the manufacture of oven coke used chiefly for metallurgical purposes.

Coke requirements thus established a ceiling on benzene output. Interruptions in either the coal or steel industries tended to create an immediate shortage and dislocations in dependent industries. For the first time benzene is being produced from petroleum at Texas City, Tex., where a plant was established with a yearly output of 5 million gallons, but most of the production will be used in the Gulf Coast area. There, consumption of benzene is 40 million gallons annually.

Memo for Small Business

Early last week small business all over the U. S. was getting the Economic Cooperation Administration's "Memo for Small Business," the first issue of a new type of information bulletin that ECA thinks will help small business find opportunities for export trade and facilitate contracts with prospective importers in European Recovery Program countries.

The memo will be issued from time to time and present a roundup of background information that ought to be valuable to many firms. It will *not* contain data on specific procurement sought by the European countries; they will be continued to be issued as soon as they are received by the Office of Small Business in "Small Business Circulars." Memo to Small Business will contain a series of separate items, complete in themselves. Items of future use can be clipped out and filed for reference.

Who's a Goat?

IT WASN'T MUCH, but, as the donor expressed it: "We Cretans are grateful for American aid to Greece. Greece is a poor country, we are poor people and have little to give. We offer agrimi as a token of friendship and appreciation."

What was agrimi? A capra aegagrus cretensis named Kri Kri. In plain English he looked like a not too smelly goat who arrived in the U. S. early last week on the first leg of his journey from Crete to the Washington Zoo.

Kri Kri's original owner, a man with a name longer than Kri Kri's biogogical classification, was a bearded Cretan mountaineer. He accompanied the agrimi who is actually one of the most outstanding rarities of the animal kingdom.

Extraordinary & Plenipotentiary

C. Tyler Wood, nominated by President Truman as Deputy U. S. Special Representative for the Marshall Plan in Europe, will assist Ambassador Milton Katz who succeeded W. Averell Harriman as U. S. Special Representative to Europe. Mr. Wood will have the rank of ambassador, extraordinary and plenipotentiary.

Mr. Wood was on the staff of the War Production Board in 1942, served in the War Department, was director of the Industrial Demobilization for the Army Service Forces. Subsequently he served in the state department and in ECA.

'ECA at Work' Available

"ECA at Work," a new brochure on the Marshall Plan, is available to the public from the ECA Office of Information, Washington 25.

Produced by the Dayton Council of World Affairs, it contains excerpts from ECA Administrator Paul G. Hoffman's recent address to the council, photographs illustrating Marshall Plan activities in Western Europe and a series of charts and other data and information about the recovery program.

Ordnance Committee Chairman

Dr. J. A. Hutcheson, director of research, Westinghouse Electric Corp., Pittsburgh, will be chairman of the Committee on Ordnance, Research & Development Board. William Webster, chairman of R & DB, made the announcement. Dr. Hutcheson served for two years as a consultant for the committee.

Coal Land Available in Dakota

About 1500 acres of coal lands are offered for lease by the Bureau of Land Management, Interior Department, Secretary Oscar L. Chapman announces.

The lands are one mile north of the Chicago, Milwaukee & St. Paul Railroad at Gascoyne, N. Dak. The sale will be held at 1 p. m. EST Aug. 23 in the office of Marion Clawson, director of the Bureau of Land Management, Washington 25. All bids on the land leases are to be submitted on or before Aug. 23. Minimum bid is $1 an acre.

The leases will be issued to qualified bidders of the highest cash amount an acre.

Buckhorn Mine Survey Complete

Five sections and a brief text on "Exploration of the Buckhorn Mica Pegmatite mine, Larimer county, Colo." were completed under the direction of the U. S. Geological Survey, says Interior Secretary Oscar L. Chapman.

The spectrographic assays of cores and sludges obtained during the diamond drilling of five holes at the mine are now available. They can be inspected at U. S. Geological Survey, libraries in Denver and Washington.

AEC Reports in 31 Libraries

American libraries—31 in all—throughout the country were named official depositaries for complete sets of atomic energy declassified and unclassified research reports, AEC announces.

Right now there are about 3500 reports in a full set and about 1500 new reports are issued by AEC every year.

AEC is going to provide each depositary library with a full set of documents and a catalog index to assist user of the documents. The complete list of depositary libraries are available from AEC.

Korea Boosts Chance of Action on Point 4

Backers of the program to aid underdeveloped areas are stepping up their campaign to get it adopted. They say it's a Communist-stopper

THE KOREAN situation has improved the chances for passage by Congress of a modified Point 4 bill.

Backers of the program which was first outlined in President Truman's inaugural address are stepping up their efforts to urge its adoption as a means of encouraging peoples in underdeveloped areas to resist the pressures of Communism. The House has just passed a Point 4 bill to guarantee American investments abroad and thus help build up the economies of colonial areas. The Senate is considering the measure.

Two Ways To Skin a Cat—The administration in Washington will not rely on Point 4 alone as a means to stiffen the backbone of colonial nations. ECA and Export-Import Bank funds are going into the Belgian Congo, isolated areas of Africa and the British East Indies. Bulk of the funds will be used to build roads. Up until now ECA money has been almost entirely used in West Europe proper. The African and East Indian action marks a new phase in ECA's activity.

The Point 4 bill passed by the House authorizes the Export-Import Bank to set up a $250 million fund to guarantee investors against such hazards as government seizure and to assure convertibility of profits into dollars.

A Hobble? — These restrictive amendments were added to the House-approved measure:

1. Treaties are required assuring "just compensation" in case of expropriation, convertibility of profits and avoidance of unfair or discriminatory practices toward American-owned firms.
2. Guarantees are forbidden on investments in enterprises that duplicate American production or compete with it.

Another part of the Point 4 program, for technical aid to underdeveloped areas, already has House approval; $35 million has been authorized for the first year. The Senate is considering the measure.

Congo To Have More Roads

Belgium has signed agreements with ECA and the Export-Import Bank whereby she will receive a loan of $1,778,000 to help finance a major road development project in the Belgian Congo. The loan is the first under the Marshall Plan for an overseas territory development project.

Marshall Plan dollars will pay for United States equipment to be used in initial stages of the Congo road-building program. The project is a ten year program, and its total cost is estimated at the equivalent of $120 million. Road-building is just one phase of a plan for the economic and social development of the African territory. Covering more than 904,000 square miles and with a population of about 12 million, the Congo is the world's largest producer of industrial diamonds, one of the world's leading copper-producing areas and a producer of a variety of other products.

The overall program for Congo development calls for expansion of roads, railroads, water navigation, power facilities and warehouses. The U.S. equipment for roadbuilding will include ten heavy and ten medium scrapers, 70 tractors, ten motor graders, ten rippers, 60 trucks, ten mobile shops and spare parts.

Isolated Areas Get ECA Aid

In another ECA project, hundreds of miles of roads opening up isolated areas of Africa and the British East Indies will be constructed with the help of Marshall Plan dollars.

About $975,000 in ECA funds will buy U.S. equipment to be used in road development projects in seven British territories: The Gold Coast, Northern Rhodesia, Nigeria, Sierra Leone and Nyasaland in Africa and North Borneo and Sarawak in the British East Indies. Other road development projects are planned for French West Africa, French Equatorial Africa and the French Cameroons.

South Africa Eyes Titanium

The Union of South Africa hopes that rising American interest in titanium will encourage a new industry in South Africa—the mining of rich titaniferrous ore reserves in the Transvaal.

D. G. Malherbe, South African government mining engineer, describes known titaniferrous reserves as "astronomical." He thinks it "probable" that large tonnages with a titanium content of 40 per cent or more can be found. That's the type being exploited in Canada.

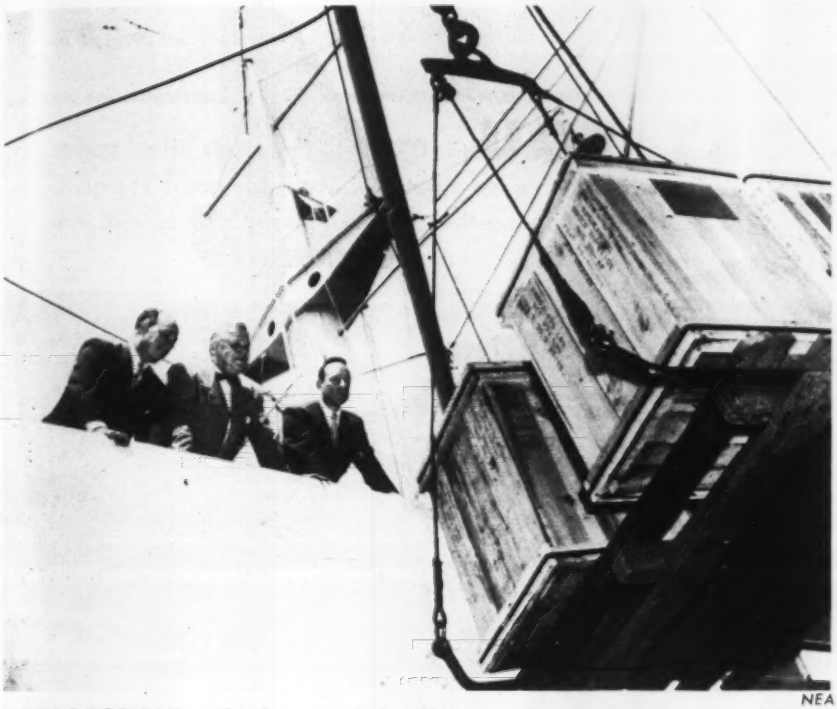
Aussie Industrialization Mounts

Australia may be the destination of a growing tide of American capital as the commonwealth's industrialization increases. Infant aluminum, tin and lead industries are getting on their feet.

The Australian Aluminum Commis-

NEA

RISING FROM THE ASHES: Against a background of steel mill chimneys an Oberhausen car moves through the streets of uncleared war debris in Germany. Cheered by the proposal of French Foreign Minister Robert Schuman to pool the industrial strength of Europe, Germany is making strenuous efforts to put the Ruhr steel mills back into operation



NEA

GOODS FOR FAIR: The first goods for Chicago's First U. S. International Trade Fair are unloaded from a Swedish ship in Chicago. Left to right are: I. S. Anoff, fair president; Col. John N. Gage, fair managing director; and B. G. Lindner, Swedish commercial attache. The fair begins Aug. 7 and ends Aug. 20

sion has tested, proved and acquired control of about 8.6 million tons of bauxite reserves. The commission is progressing with a plan to build a plant at Ball Bay on the Tamar river in Tasmania. Production of ingot aluminum is likely to begin sometime in 1952.

The plant probably will be finished by mid-1952.

Tin smelting is expected to increase in Australia as a result of the sale of a smelting plant to British Metal Corp. Pty. Ltd. The plant is one of two in Australia to smelt domestic ore.

Anglo-Westralian Mining Pty. Ltd. is expanding its lead and other mining activities in the northern part of Western Australia.

Mount Lyell Mining & Railway Co. Ltd. has just borrowed £750,000 (about $1,687,500) from Australian sources to expand its coppery mining operations at Mount Lyell. The company is also floating a new capital stock issue of 775,000 shares, par value £1.

Australian Iron & Steel Ltd. is building the largest industrial project ever undertaken in Australia. It includes a hot-strip mill, a cold strip mill, and a tin plate plant at Port Kembla. When completed —not for several years—it will double Australia's steel output and introduce tin plate, the only major steel project not yet produced in Australia.

Aetna-Standard Supplies Mills

Aetna-Standard Engineering Co., Youngstown, is supplying a butt weld continuous pipe mill and wire drawing equipment for the expansion program of Industria Argentina de Aceros S. A. (Acindar) in Buenos Aires (STEEL, July 10, p. 57). The pipe mill will produce pipe in a range from ⅜ to 4 inches and will go into production by June, 1951. Wire drawing equipment will be in production this year.

Trade Fair—Horizontal Type

Products from over 40 nations will be shown at the First United States International Trade Fair to be held in Chicago Aug. 7 to 20. The fair is the first horizontal trade show of its type to take place in the U. S.: Other large trade shows have been vertical shows catering to special industries. The Chicago fair includes all industries, consumer goods, industrial supplies and equipment and raw materials, chemicals and metals.

Trieste, Turkey, Tunis, Tito—Although principally for buyers, the fair will be open for limited hours to the general public. Among the countries listed for representation at the fair is Yugoslavia. Others: Algeria, Argentina, Austria, Belgium, Brazil, Canada, Ceylon, Colombia, Cuba, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Saar, Sweden, Switzerland, Trieste, Turkey, Tunis, United Kingdom, Venezuela and Viet Nam. And of course, the United States.

Among heavy and light industrial machinery and equipment firms participating are 18 from Western Germany. Machinery and equipment from all countries varies from baby tractors, crawler type, to cameras, biflex type.

ISO To Meet in the U. S.

The International Organization for Standardization accepted an invitation to hold its 1952 General Assembly in the United States. Delegates of the 29 countries that are members of the ISO will be guests of the American Standards Association. As U. S. member, ASA presents the viewpoint of U. S. groups that come before the ISO for international consideration.

How To Sell Machine Tools

Two new streamlined versions of the Machine Tool Sales Refresher course were shaped up for 1950 by a joint committee representing the National Machine Tool Builders' Association and the American Machine Tool Distributors' Association.

The committee believes it has profited from the experiences gained in presenting similar course for the last two years. Under the leadership of Harry J. Losberg, director, Sibley School of Mechanical Engineering, Cornell University, almost identical courses will be held at Cornell University, Ithaca, N. Y., July 31 through Aug. 4, and Purdue University, Lafayette, Ind., August 21 through Aug. 25. Mr. Losberg has been educational director of the courses since their beginning.

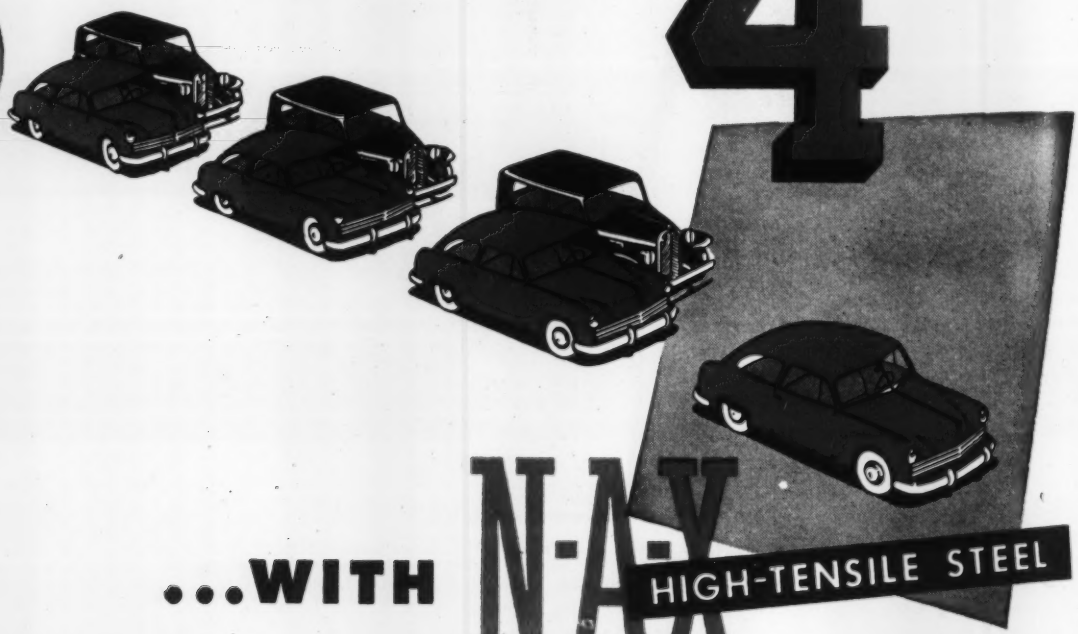
Dollars and Cents—Teaching staffs will include marketing and sales engineering experts from sponsoring associations and from the faculties of Cornell, Purdue and Western Reserve universities. Several lectures will be given by important machine tool using industries.

Particular emphasis will be put on effective translation of engineering features of machine tools into dollars and cents values to customers—by word of mouth and by correspondence.

Some analyses of recent surveys will be used to show the abilities and shortcomings of machine tool salesmanship as observed by those on the receiving end of the selling efforts.

Advance registration for the Cornell session is 105; 81 will be sent by the builders and 24 by the distributors. Registration at Purdue is 109; 83 from the builders and 26 from the distributors.

3 WILL GET YOU 4



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MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
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It's a fact. It's demonstrated every day, in the production of varied parts and products. *Three tons* of N-A-X HIGH-TENSILE steel are yielding as many finished units as were yielded formerly by *four tons* of carbon sheet steel!

This "new arithmetic in steel" is in step with industry's trend to the use of improved steels. When cold-rolled steel was found to be preferable to hot-rolled for many uses, industry substituted cold-rolled for hot in these uses. Today, it is equally logical and economical to replace simple carbon sheets with low-alloy high-tensile.

N-A-X HIGH-TENSILE makes it possible to reduce sections by 25% ... and *still provide* greater strength and durability than can be obtained with thicker sections of mild-carbon steel! Each ton of N-A-X HIGH-TENSILE steel represents a potential 33% increase in finished goods. Manufacturers are finding that N-A-X HIGH-TENSILE enables them to get 33% greater usefulness out of steel supplies.

Investigate this great opportunity to make each ton of sheet steel go farther ... through the superior quality of N-A-X HIGH-TENSILE.

GREAT LAKES STEEL

Corporation

N-A-X Alloy Division, Ecorse, Detroit 29, Mich.
UNIT OF NATIONAL STEEL CORPORATION

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

What will the car of 1970 look like? Chances are the changes from '50 models won't be as radical as those from the 30s to the 50s. Premium will be on production men

DETROIT

PROGRESSIVE changes in appearance and design of passenger cars have a way of slipping by from year to year with little attention paid to their cumulative effect. In fact, considerable fun has been poked at the industry for its "facelifting" technique in model changes. But if you could get a brand new model of, say 1930 vintage and place it alongside its 1950 counterpart, the 20-year evolution would be striking enough to make the earlier design look ludicrous. The wonder is that such a complete change has been possible in so relatively short a period of time.

That, of course, is one of the auto industry's key factors in successful operation—obsoleting today's stuff as rapidly as possible to satisfy the American urge to "own the newest."

Inescapable Question — After you go over the 1930 and 1950 models part by part, noting the shift to streamlined body contours, larger fenders, heavier and bulkier bumpers and bumper-grille assemblies, expanded glass area, larger tires and greatly increased seat widths, this question is inescapable: How can such a complete appearance change be realized again in 20 years?

Certainly the industry's designers have not reached the point where they are going to sit back thinking they can go no further. Yet what can be done designwise through the 50s and 60s to make the 1970 model so different that the 1950 version will bring the laughs?

Bowed-Head Race?—The limits on body dimensions appear to have been reached, if not exceeded in some cases: Just in the past couple of years, several makes have been shortened in overall length by pulling in front and rear bumpers slightly—in the interests of silencing complaints over difficulties in garaging and parking. Body widths are just about at their extremity, and roof height cannot be trimmed down much more without creating a race of drivers with permanently bowed heads. Streamlining is not likely to proceed much further, in fact it went too far and has retreated in recent years.

Bold and Well-Heeled — Rear engines are a possibility but they pose troublesome problems in weight distribution and controls, not to mention large outlays for new tooling and fixtures. Most of the major producers continue to shy away from rear engines, and it will have to be some bold and well-heeled independent to take the step. Development of smaller and lighter power plants makes the possibility of rear mounting more interesting and perhaps considerably closer than it was five years ago.

Designer vs. Production Man—It is likely progress in the next two decades will be more in the direction of finding ways to reduce the cost of building cars than toward changing their outward appearance radically. Possibly, then, the designer may be less in demand than the smart production man. Burdens of pension plans and the dozens of other fringe payments that must be made to working forces would seem to make such a development imperative.

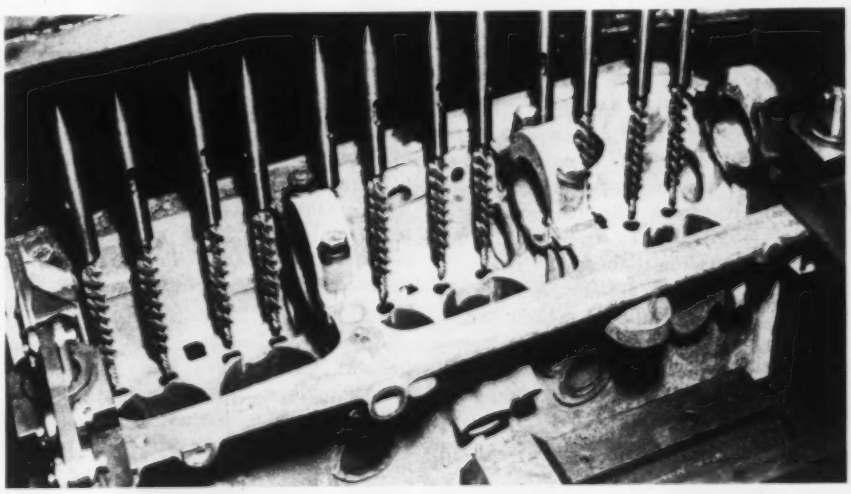
All this is not to infer that passenger cars have evolved to their ultimates, but rather that changes in outward appearance in the next 20 years will be at a slower pace than during the past two decades.

As far as 1951 models are concerned, no sharp deviations from the current pattern are seen. If the military situation worsens to the point where serious limitations on production develop, some of the changes now contemplated may be scrapped. But classified sections of Detroit newspapers continue to be jammed with solicitations for die designers, tool and fixture designers, Keller machine operators, die tryout men. Many ads promise six-day weeks at top rates.

Nearly Caught Flat-Footed

It is no secret that the hard-top convertible or sports coupe caught the industry nearly flat-footed. Demand for this body styling completely outdistanced the capacity to build. Chrysler rammed through its versions in a hurry to meet the competition of General Motors types, while Ford had to be content with dolling up two-door sedans with special paint and trim.

Wait'll Next Year—Next year will see added emphasis by all producers on this type of body, both in two-door and four-door series. When GM first came up with the styling in Buick, Olds and Cadillac, it was regarded as more or less of a stunt, or a compromise to give "old men" the feeling of a convertible without the adverse effects from wind and weather. A steel roof panel with slenderized rear quarter supports and no



THE BRUSH OFF: Power brushing to remove excess lubrite from valve tappet holes and cylinder bores in automobile engine blocks is bringing time and cost savings to at least one automaker. By supplying the right brush with the right quality wire, Osborn Mfg. Co., Cleveland, also made it possible to get 75 per cent fewer re-runs to blend the lubrite into the pores of the cylinder walls. Here, mounted on a 12 head spindle, turret type drilling machine are the Osborn strip brushes. Rotating at 800 revolutions per minute, the brushes clean up the holes in 30 seconds

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side supports was tooled up and the stamping welded to a convertible chassis. Rear window was curved around the sides, giving an unusual showcase effect yet contributing importantly to rearward vision, something a convertible notoriously lacks when the top is raised.

Some engineers were convinced the body would have no strength and the rear curved window would snap out with the smallest twisting strain. Such was not the case, and the public reaction to the design was sensational. Tooling for Pontiac and Chevrolet had been deferred as an ill-advised expenditure in the face of heavy demand for regular models. It was quickly tagged rush and the Pontiac Catalina and Chevrolet Bel Air met the same burst of enthusiasm from buyers.

Younger Generation and Cars

What the younger generation believes the car of tomorrow will be can be seen from inspection of the 1000-odd models submitted in the Fisher Body Craftsman's Guild, now being judged in the General Motors building here. Coming from every state in the country, the models are built to standard basic dimensions and range from the crudest whittlings to handsomely finished versions complete to the last door handle. Cash awards and university scholarships aggregating $65,000 are made to the boys whose entries are adjudged best on the basis of design, workmanship, originality and practicality. Fourteen winners will be selected for each state and the District of Columbia, evenly divided between the junior (12-15) and senior (16-19) age groups. State winners are then matched against other state winners in their regions for 40 regional awards.

All models are now on exhibit and bring unusual reactions from the public. One of the most frequent comments heard from those inspecting a better-looking entry is speculation over which General Motors' executive had it built for his son. Actually, while a number of the models are submitted by sons of GM employees, if they turn out to be winners, duplicate awards are made to "outsiders," assuring 734 awards to boys not in the GM family.

A quick check on the display indicates that some of the slickest creations come from California where there is probably a higher degree of car-consciousness than elsewhere in the country. In general the designs follow pretty much the lines of cars now in production; a few innovations have rocket-shaped headlights mounted on tops, fender louvers and other ornate touches.

Mercury Sales Are Mercurial

Lincoln-Mercury shipments in the first half of the year totaled 185,415, of which 168,247 were Mercurys, representing an increase of 85 per cent over the first six months of 1949 and 46 per cent ahead of the second half of last year. Deliveries were 82 per cent of those for all last year. During the last ten days of June, Mercury sales were 13,653, up 12 per cent from the previous ten-day record high and up 129 per cent from the same period a year ago.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	732,161	508,101
June	890,000*	523,689
Six Months	3,934,019*	3,034,055
July		604,351
August		678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
July 1	197,767	144,822
July 8	137,731	118,611
July 15	202,954	156,436
July 22	200,000	160,713

Estimates by Ward's Automotive Reports

* Preliminary.

GM July Sales at Hot Pace

First reports on July sales show little easing in the furious buying pace. Olds delivered 8938 for the first ten days of the month, 28 per cent ahead of the same period last year and bringing shipments for the year to 204,939.

Last year it was mid-September before 200,000 cars had been sold. Buick dealers sold 10,838 units in the first July sales period, bringing the year's total past the 300,000 mark. The rate was 41 per cent over July a year ago.

The final tally on Nash sales in June showed deliveries up 45.2 per cent over June, 1949, totaling 21,297.

Willys Sales Speed Along

Factory shipments of Willys Jeeps, trucks and station wagons for June were the highest in the last 17 months and reflected a gain of 62 per cent over the monthly average for the previous 12 months. Accelerated production at the Toledo, O., plant has completely exhausted seniority lists and the company is now hiring on the "open market." Working force now numbers 8000 and second shifts have been started in several motor parts departments to meet increased engine schedules for Kaiser-Frazer.

Third shifts are being contemplated for later in the year. Annual inventory, to be taken the latter part of this month, will not curtail production activity.

Steel Still Controlling Factor

Steel remains the controlling factor in determining auto schedules over the balance of the year. Every avenue of supply is being investigated, warehouse and conversion ingot tonnage included.

Ingots are available here and there, but the difficulty is finding some mill to break them down. One broker here was offered a substantial tonnage of ingots from a midwestern plant for $68 a ton. He agreed to take them all if the mill would roll them down to slabs. The mill replied this could not be done, even if the broker paid $150 a ton for the steel, rolling schedules being jammed to the hilt.

Concern is being voiced over the possible impact of an accelerated program of military procurement on steel supply for automobiles. There is a feeling that mills have been overly generous in apportioning tonnage to automotive accounts, and any tightening up of allocations would hit automobiles first. Just when and by how much are questions yet to be answered.

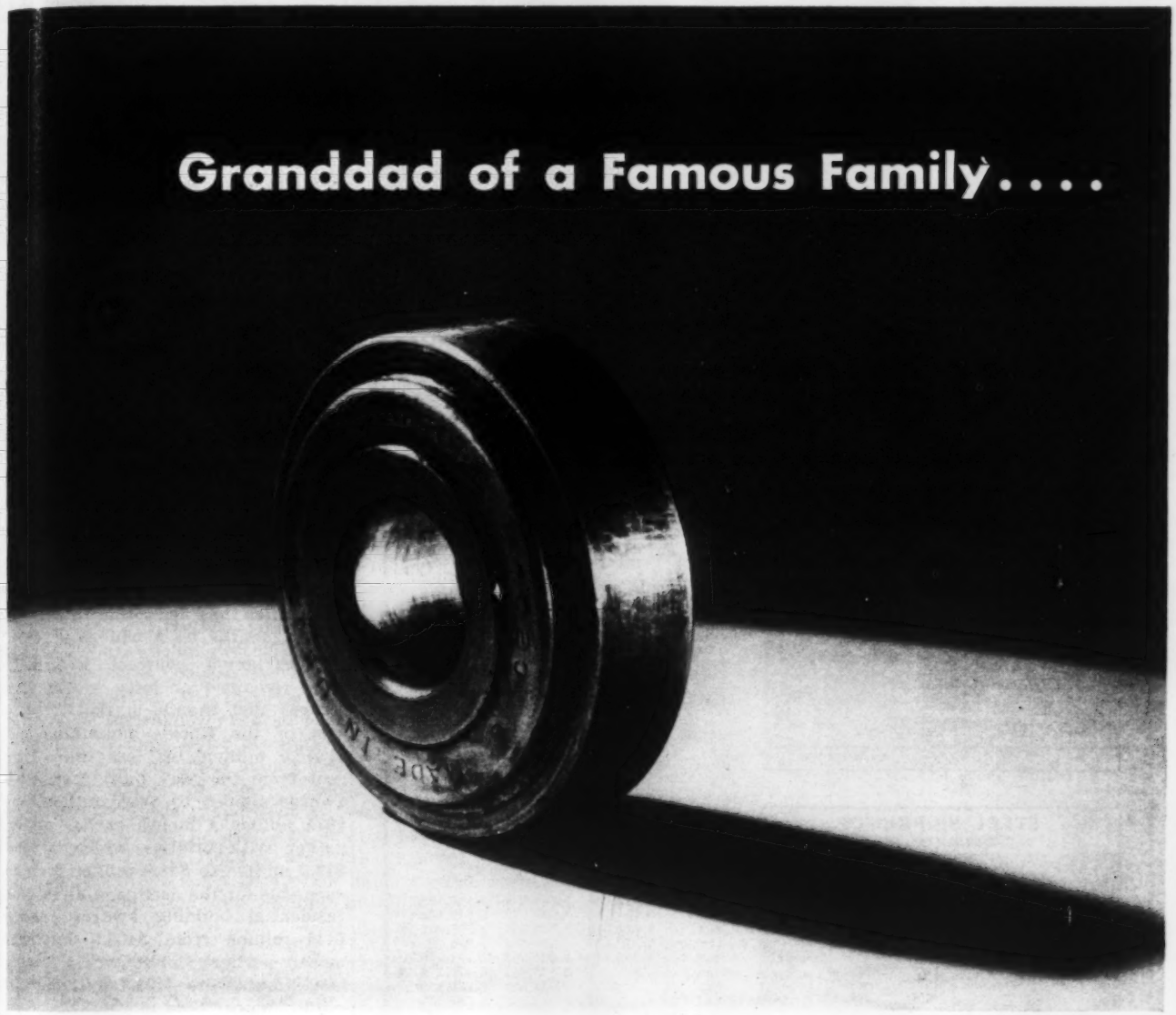
It definitely appears reasonable to assume the motor plants will not be receiving any more steel than they are getting today.

The chances are there will be some reduction.

Packard Sweating Out Suppliers

Packard hopes to drop the first bodies on 1951 model chassis by July 27. Follow-up men have been sweating it out with suppliers in recent weeks, chasing parts to make sure they will be on hand in time to make the schedule. The changeover is the first of major proportions for Packard since before the war, and great things are expected of the brand new series.

Parts and feeder lines have been building up a float prior to the start of final assemblies this week.



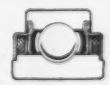
This self-sealed ball bearing, one of the earlier types originated by New Departure, was removed and examined in the twentieth year of its service in a grinder. No appreciable wear had occurred and the internal fit-up was still *well within* the tolerances of a new bearing.

While this is eminently satisfactory, but not unusual service, it points up the significant fact that for assured performance, for the ability to eliminate periodic adjustments and to reduce lubricating or other maintenance to the simplest possible terms, the ball bearing is *outstanding*.

It was full knowledge of the distinctive advantages of the ball bearing that led New Departure to pioneer and develop the self-sealed bearing, including many lubricated-for-life types, some of which are illustrated at each side.

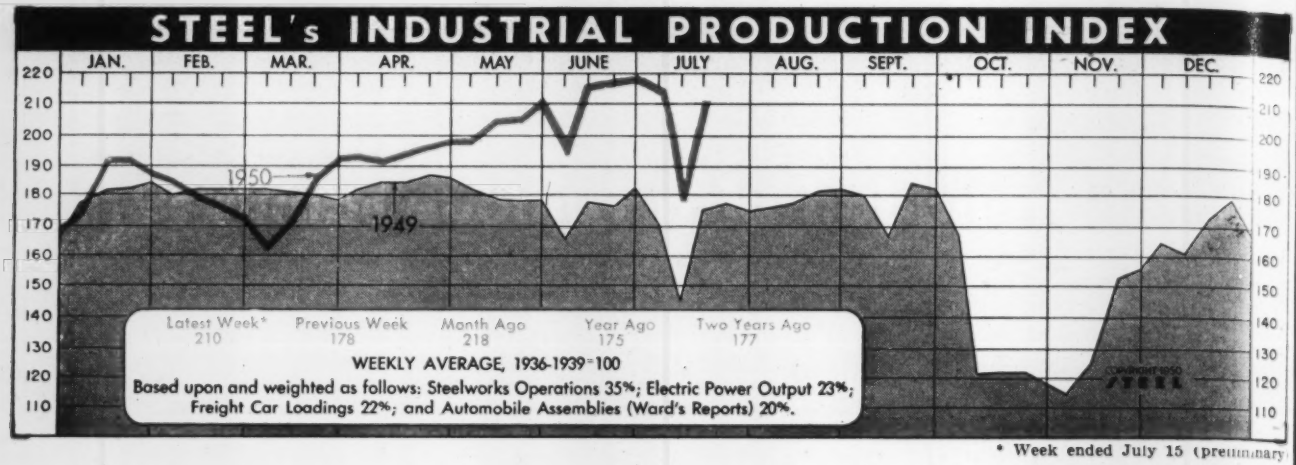
This hard worked "Granddaddy", progenitor of a famous family, thus started a trend that has required New Departure to produce more than 159 million self-sealed ball bearings to date.

Data covering ball bearing dimensions, application, lubrication and other subjects gladly sent upon request.

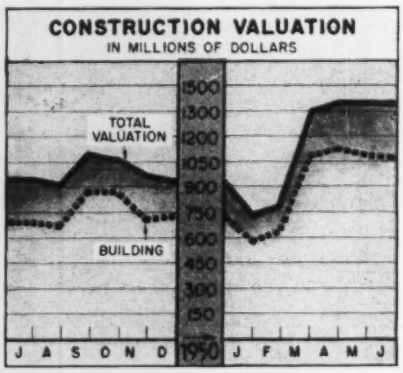


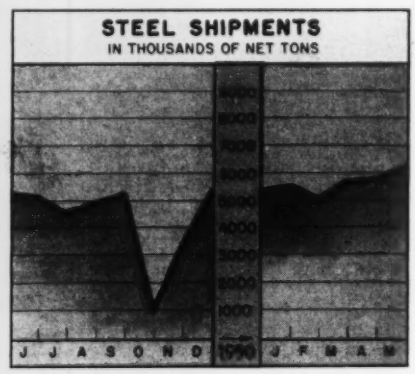
NEW DEPARTURE BALL BEARINGS

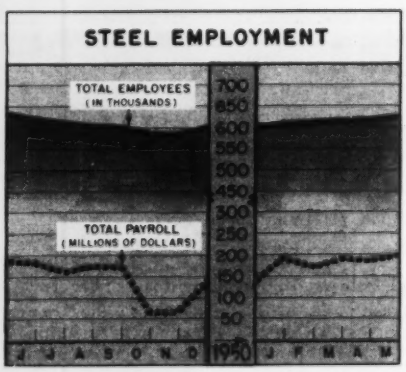
NEW DEPARTURE · Division of GENERAL MOTORS CORPORATION · BRISTOL, CONNECTICUT · BRANCHES IN ALL PRINCIPAL CITIES



* Week ended July 15 (preliminary)







Charts—Copyright 1950, STEEL

Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1950	1949	1950	1949
Jan.	730.9	483.0	578.8	381.0
Feb.	779.5	568.5	627.0	415.0
Mar.	1,300.2	747.6	1,075.3	579.2
Apr.	1,350.5	842.6	1,123.5	620.2
May	1,347.6	880.3	1,083.0	666.9
June	1,345.5	945.7	1,072.0	706.7
July	....	943.6	....	690.9
Aug.	....	905.7	....	671.5
Sept.	....	1,093.7	....	870.6
Oct.	....	1,061.8	....	857.8
Nov.	....	957.8	....	701.3
Dec.	....	929.0	....	722.2
Total	....	10,359.3	....	7,883.3

F. W. Dodge Corp.

Steel Shipments

Net Tons

	1950	1949	1948
Jan.	5,482,691	5,788,632	5,410,438
Feb.	5,134,780	5,519,938	5,046,115
Mar.	5,723,340	6,305,681	5,978,551
Apr.	5,780,453	5,596,786	5,096,161
May	6,252,672	5,234,862	5,321,375
June	.....	5,177,259	5,476,774
July	.....	4,534,855	5,229,880
Aug.	.....	4,918,314	5,329,060
Sept.	.....	5,236,196	5,511,474
Oct.	.....	935,037	5,952,008
Nov.	.....	3,296,809	5,732,256
Dec.	.....	5,410,902	6,056,282

American Iron & Steel Institute

Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1950	1949	1950	1949
Jan.	609	650	$189.3	$202.1
Feb.	613	653	174.7	189.8
Mar.	616	652	190.0	207.2
Apr.	621	647	186.2	191.9
May	628	637	199.9	188.4
June	....	625	....	181.8
July	....	610	....	160.3
Aug.	....	603	....	175.6
Sept.	....	600	....	173.5
*Oct.	....	584	....	63.1
*Nov.	....	584	....	63.1
Dec.	....	602	....	136.9

Monthly average. * Averages taken from single figure for the two strike affected months. American Iron & Steel Institute.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Employ., Metalwkg. June19	Indus. Prod. July10	Ranges, Gas July10
Fab. Struc. Steel...July17	Ironers July17	Refrigerators June26
Foundry Equip. July10	Machine Tools June26	Steel Forgings June5
Freight Cars July17	Price Indexes May1	Trucks, Elec. Ind...Jan.2
Furnaces, Indus. ..July17	Pump Orders.....July17	Vacuum Cleaners ..June5
Furnaces, W. Air..May8	Purchasing Power..June12	Wages, Metalwkg...June19
Gear Sales July10	Radio, TV July17	Washers July10
Gray Iron June5	Ranges, Elec. June26	Water Heaters July10

Slowing Likely in Construction

There may be some easing in construction's pace with a tightening in credit terms and reduced availability of materials even with only a limited mobilization. The area most likely to be affected is residential construction which has led other awards in recent months by a wide margin.

Construction contract awards in June remained at lofty levels. Total awards that month in the 37 states east of the Rocky mountains were $1345.5 million, off less than 1 per cent from the May total. Residential awards slipped to $628 million from $675 million a month earlier and together with utilities which dropped $13.2 million to $51.8 million were responsible for the decline in June. Nonresidential building awards rose to $444 million from $408.5 million a month earlier. Public works awards last month were $221.7 million, $22.5 million higher than in May.

Although total awards declined in both May and June from the April peak, June's awards were 42 per cent higher than in May, 1949.

Steel Shipments Near Record

Finished steel shipments in May were second only to the alltime high set in March, 1949. May's total was 6,252,672 net tons and represented a big rise over April's 5,780,862 tons. The alltime record is 6,305,681 tons.

Shipments for the first five months total 28,371,991 tons, slightly below the 28,456,400 tons shipped in the corresponding period a year ago. When the June total is added to the first five months, the first half total will exceed that for 1949.

Automotive industry took 1,258,357 tons or 20.5 per cent of May shipments to again rank as the leading steel consumer. Its aggregate for the first five months is 5,877,761 tons or 21.1 per cent of the total. Jobbers hold the runner-up spot both for May and the year to date.

The Business Trend

A safe bet is metalworking's consumer goods output will be reduced as metals are diverted to either military or allied programs in greater volume

BUSINESS as usual? No one believes this conditions will continue for very long but until the word comes down from Washington that some changes are in order there is nothing else for metalworking companies to do but keep on turning out consumer goods.

There aren't very many metalworking companies that will escape the effect of even partial mobilization. It is obvious even to "the man on the street" that automobiles, refrigerators, stoves and other steel sheet consuming items may get hard to get but others will feel the pinch too.

Prices are being watched closely and with some concern. Advances in individual items and in price indexes may foreshadow further action along these lines. Some precautionary buying is taking place among metalworking companies but it hasn't reached stampede proportions as has consumer buying in scattered lines.

Although some plants are still closed for vacations, production is gaining momentum and heading toward peaks attained at the end of June. In the week ended July 15 STEEL's industrial production index zoomed 32 points higher than the preceding week. The preliminary total for the week is 210 per cent of the 1936-1939 average.

A preliminary estimate of June's production by the Federal Reserve Board puts the board's index at a postwar high of 197. This estimate was submitted to Congress by the President's council of economic advisers and is published by the Joint Committee on the Economic Report. The FRB index is based on the 1935-1939 average equaling 100. May's index was 193 and the previous high was 195 reached in October and November, 1948.

Automobiles. . .

Passenger car and truck outturn rebounded to 202,594 units in the week ended July 15 from 137,731 in the preceding week but dealers' backlogs grew even more. All makes and models are on extended deliveries and steel stocks rather than dealers' orders will limit future passenger car assemblies. Conversion deals are again springing up as automakers try to supplement their deliveries from regular sources with high-priced steel. Field stocks of passenger cars are at a minimum even though first half production set an alltime record for the period by a wide margin.

Steelmaking. . .

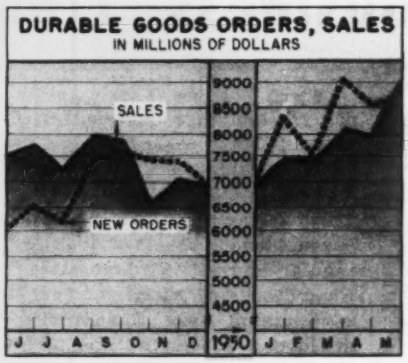
Mounting pressure for steel recalls stories of the immediate postwar period. Consumers are scrambling for steel, particularly sheets, in a manner that would be funny if it weren't so serious. All this is happening despite a steelmaking rate being maintained at 95 per cent of theoretical capacity or higher since the last week in March and sizable plant expansions. Last week the output of steel for ingots and castings moved up a few points from the 96 per cent registered in the week ended July 8.

Bituminous Coal. . .

Warning to industrial users and retail dealers to book orders now is

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	96.0	95.0	101.5	90.5
	Electric Power Distributed (million kilowatt hours)	6,006	5,380	6,011	5,342
	Bituminous Coal Production (daily av.—1000 tons)	250	1,693	1,798	819
	Petroleum Production (daily av.—1000 bbl)	5,495	5,475	5,347	4,725
	Construction Volume (ENR—Unit $1,000,000)	$365.0	$214.4	$277.4	$190.3
	Automobile and Truck Output (Ward's—number units)	205,594	137,731	204,704	156,436
	*Dates on request. †1950 weekly capacity is 1,906,267 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	716†	544	860	724
	Business Failures (Dun & Bradstreet, number)	187	138	860	724
	Money in Circulation (in millions of dollars)‡	$27,169	$27,315	$26,993	$27,480
	Department Store Sales (changes from like wk. a yr. ago)‡	+7%	+10%	+5%	−7%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$14,345	$13,031	$13,553	$13,196
	Federal Gross Debt (billions)	$257.2	$257.2	$256.3	$252.8
	Bond Volume, NYSE (millions)	$29.9	$16.0	$23.7	$15.1
	Stocks Sales, NYSE (thousands of shares)	12,961	6,374	7,929	4,561
	Loans and Investments (billions)†	$67.7	$68.0	$67.0	$62.6
	United States Gov't Obligations Held (millions)†	$36,152	$36,638	$36,183	$34,735
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	156.69	156.69	156.58	152.80
	STEEL's Nonferrous Composite‡	194.8	184.0	185.5	174.1
	All Commodities†	161.8	159.0	156.7	154.0
	Metals and Metal Products†	173.1	173.0	173.2	167.6
	†Bureau of Labor Statistics Index, 1926=100 ‡1936-1939=100. ††1935-1939=100.				

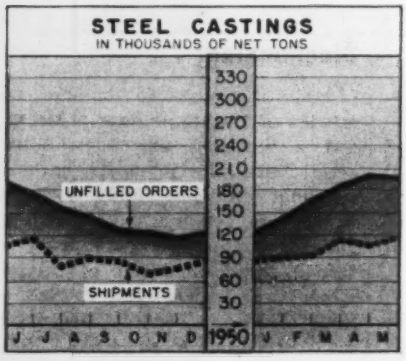


Durable Goods Orders, Sales

In Millions of Dollars

	New Orders		Sales*	
	1950	1949	1950	1949
Jan.	8,377	6,706	7,471	7,550
Feb.	7,513	6,734	7,461	7,757
Mar.	9,075	7,185	8,127	7,805
Apr.	8,531	6,127	7,956	7,445
May	8,780	5,993	9,013	7,488
June	....	6,544	....	7,745
July	....	6,195	....	7,207
Aug.	....	7,407	....	7,982
Sept.	....	7,634	....	7,877
Oct.	....	7,432	....	6,542
Nov.	....	7,402	....	7,041
Dec.	....	7,019	....	6,960

* Seasonally adjusted. U. S. Office of Business Economics

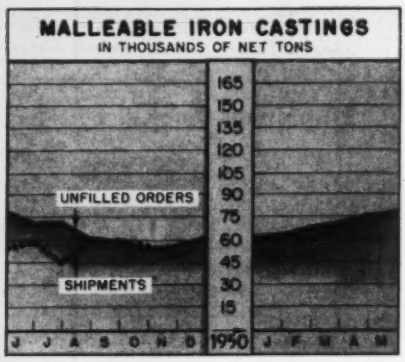


Steel Castings

In Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	88.8	140.6	142.5	338.9
Feb.	91.8	135.0	165.2	320.2
Mar.	111.8	138.9	185.6	284.8
Apr.	107.0	120.0	201.6	250.5
May	117.9	106.2	198.0	191.5
June	....	116.1	....	173.2
July	....	78.7	....	155.5
Aug.	....	90.0	....	143.6
Sept.	....	86.5	....	127.7
Oct.	....	70.7	....	124.8
Nov.	....	76.4	....	117.9
Dec.	....	84.5	....	122.9

*For sale. Bureau of the Census



Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	62.9	71.9	62	126
Feb.	60.4	66.7	67	118
Mar.	66.3	72.1	70	102
Apr.	69.8	61.3	76	95
May	76.2	54.6	77	79
June	....	59.6	..	70
July	....	44.4	..	71
Aug.	....	58.1	..	61
Sept.	....	60.5	..	58
Oct.	....	57.2	..	54
Nov.	....	49.4	..	56
Dec.	....	57.4	..	61
Total	....	713.1		

* For sale. Bureau of the Census

Charts—Copyright, 1950, STEEL

issued by National Coal Association. Outside influences over which the industry has no control have depleted stockpiles and have interfered with the usual summer replenishment process the association says. Even though production in June ran between 10 and 10.5 million tons per week, the association adds, there were severe coal car shortages on some railroads. Normally railroads are equipped to handle more than 12 million tons a week. Coal stocks at the head of the Great Lakes are very low. Stevedore strikes at lower Lakes ports have added to the difficulties.

Prices. . .

Another sharp advance in the Bureau of Labor Statistics wholesale price index came in the week ended July 11. The bureau's index moved up 1.8 per cent to 161.8 per cent of the 1926 average, 3.3 per cent above 4 weeks ago and 5.1 per cent above comparable week in 1949. The daily index on spot markets advanced 3.3 per cent during the week as the Korean conflict had a marked effect on most commodity prices.

Dividends. . .

U. S. corporations cash dividend payments amounted to $210.6 million in May or 12 per cent more than in May a year ago. Commerce Department says dividends in the three months ended May, 1950, aggregated $1512 million or 9 per cent above the total in the like 1949 period. Finance registered the largest gain over last year and most other industrial groups increased moderately. Only railroad corporations registered a decline and it was substantial.

Tools Back in Spotlight

Machine builders still doing business with regular customers despite defense rumors

MACHINE tools are an area of speculation and wonder again. After a long period when machine tools were in surplus supply, users are beginning to worry about availability.

A lot of the rumors about what is going on in machine tools have no foundation. Reports are going the rounds about military buying for instance. They are true only in a qualified sense. The armed forces are buying machines but not at any greater rate than before.

Depends on Machine—Some companies are wisely trying to get their houses in order by replacing obsolete equipment. Whether they have to wait very long for delivery depends on the machine purchased. Some standard items, like lathes, can be purchased from stock as they have not shared in improved business that special machinery builders have enjoyed since the start of this year. As the result of deals being closed for modernization purposes the whole machine tool industry is doing better. Earlier this year though the National Machine Tool Builders' Association's index was up, some standard machine builders weren't benefiting.

A few companies are dusting off escalator clauses because materials costs are rising. Here too it depends on what machine is ordered and how long it will be until it is shipped. In many cases it represents no change from a policy in effect since the end of World War II.

Muscles Withered—Relative strength of the machine tool industry as measured by its ability to produce equipment in some respects is below 1941. From 1936 to 1939 plants were building tools for Europe. The defense preparations starting in 1940 showed up a lot of bottlenecks. In 1942 shipments were $1.3 billion, an alltime peak.

They have declined every year since then and industry employment is down to about 36,000. Although some companies have larger plants, parts of them cannot be considered machine tool capacity because they are devoted to making other equipment.

Business Up 1200 Per Cent

More business in the first six months of 1950 than during the entire six years before the war, 1936-1941—that is the record of Chrysler Corp.'s Airtemp Division, Dayton, O., builder of air conditioning, heating and commercial refrigeration equipment. Since

the war Airtemp employment is up 134 per cent, floor space up 165 per cent, dealer body up 500 per cent. Last month, dollar volume of business was about equal to all of 1941. Outlook for the remainder of the year is extremely good, with demand at an alltime high, says W. C. Newberg, president.

Prewar, Airtemp offered 30 different models of packaged air conditioners, residential air conditioners, room air conditioners, radial condensing and compressing units, gas-fired residential furnaces and oil burners. Now the company is making 51 different models in prewar categories and ten more, including individual room cooling and heating units, dehumidifiers, conversion gas burners and ice cream cabinets.

Trailer Orders Roll

Incoming orders for Fruehauf Trailer Co., Detroit, amounted to more than $12 million in June while sales grew bigger for the sixth successive month, reaching $10.6 million. Sales total for the first half was more than $51 million, compared with $38.1 million in same 1949 period and $42.7 million in the like 1948 period. The record year to date for Fruehauf sales was 1948.

On June 30 the company paid in full all its notes payable to banks. These were reported at $5 million on Dec. 31 and $3 million on Mar. 31. Company's borrowings were made on lines of credit with 17 banks. This is the first time in many years Fruehauf has not had any obligations to banks.

A contributing factor toward payment of the notes was the reduction in inventories from a $41.3 million peak in April, 1947, to $24.1 million in May this year. Fruehauf accomplished this by better controls, installation of machinery and equipment to reduce steel stocks and through improved availability of materials. Accomplishing this inventory reduction while sales are rising results in a faster turnover of material.

Sales May Hit $90 Million

Sales running 25 per cent ahead of a year ago are reported by Robert H. Morse Jr., president, Fairbanks, Morse & Co., Chicago. Total for the first half is $43,245,584, yielding earnings of $1,627,116. This sum includes $558,456 in nonrecurring profits from a utility properties sale.

Sales near $90 million are expected by the company for all 1950. In 1949 they were $77,650,060. This improvement in sales should show a healthy gain in earnings for the year. Mr. Morse says all seven Fairbanks Morse divisions are participating in the larger sales volume.

Controlling interest in Canadian Locomotive Co., Kingston, Ont., was acquired this year by the company. The plant is being retooled for diesel locomotive construction and will be ready for operations in about six months.

Altogether Fairbanks Morse is spending $5 million on plant construction and improvement in 1950. About half this sum is going into a boiler plant at Beloit, Wis.

Business Looks Good to P.A.'s

Excellent business prospects are reported by 19 out of every 20 companies surveyed by the Purchasing Agents Association of Chicago. Employment appears to be nearing an alltime high as 99 out of every 100 companies reported they had the same or larger number of employees in June compared with a month earlier.

On the negative side of the ledger are rising prices and some slowing in deliveries. Higher prices are reported by three-fourths of purchasing agents, the highest percentage since August, 1948. For the first time in six months less than 50 per cent of reports showed no change in deliveries. Slower deliveries were experienced in June by 42 per cent and faster by 14 per cent.

Inventories continued to climb in June as they did in the last four months. Same or larger inventories as compared with May were reported by 84 per cent.

Thor Cuts Dryer Prices

Savings in production costs resulting from increased sales made possible a 16 per cent price cut in Thor Corp's electric clothes dryer, says M. R. Wilson, general sales manager. Mr. Wilson estimates the home laundry industry's sales volume of clothes dryers in 1950 will show a 133 per cent increase over last year's total of 105,700 units. "Of all electrical appliance with low saturation, the dryer offers distributors and dealers the greatest opportunity for plus sales volume," he declares.

Another Record: Wages and Salaries This Time

WAGE and salary payments reached the highest annual rate ever recorded in May and when June figures are tabulated this total will probably be exceeded. Employees receipts in May reached an annual rate equal to $139.2 billion or $1.1 billion above April.

Wages and salaries for complete years are compared to the May figure which is expanded on an annual basis in the accompanying chart. Commerce Department reports both wage and salary payments and total personal incomes at an annual rate rather than as a monthly total.

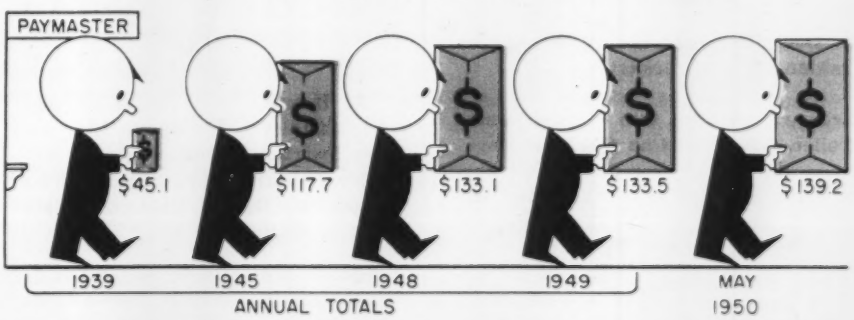
Pacesetters Again—Durable goods manufacturing industries payrolls increased during May and accounted for most of the gain over April. Settlement of the Chrysler strike was an important factor. Wages in nondurable goods industries and in contract construction also increased.

Proprietors' income, both farm and nonfarm, rose about $1.7 billion in May to $41.5 billion. Farm proprietors harvested most of the gain as their income rose about $1.1 billion on an annual basis reflecting larger receipts from livestock marketings as well as higher prices.

Paying Out—Although wages and proprietors' incomes were both up, May's total income dipped slightly to $213.3 from $213.8 in April. The reason is simple enough: Veterans insurance dividends skidded to $95 million from $345 million a month earlier. Aside from the veteran's windfall personal income was up to $212.2 billion in May from $209.7 in the preceding month.

Employees' Receipts at $139.2 Billion Rate

. . . exceed previous month's figure by $1.1 billion



Figures in billions. May payrolls are listed at an annual rate.

Men of Industry

RICHARD H.. FRIZZELL
. . . dept. sales mgr., Wickwire Spencer Steel

D. J. RICHARDS
. . . domestic and foreign sales, E. F. Houghton

CHARLES R. BEESON
. . . Ohio Stainless & Commercial Steel V. P.

Richard H. Frizzell was appointed sales manager, structural products department, **Wickwire Spencer Steel Division,** Colorado Fuel & Iron Corp., New York. He succeeds **G. L. Crawford,** who will devote full time as sales manager of the division's Buffalo sales district. Both men will continue their headquarters at Wickwire's offices in Buffalo.

Leo J. McPharlin was appointed director of purchases, **Briggs Mfg. Co.,** Detroit, succeeding **Stanley W. Cochrane,** who was given leave of absence to direct operations of Briggs Motor Bodies Ltd., a subsidiary in England. **Robert H. Baker** will fill Mr. McPharlin's former post as assistant director. Mr. McPharlin has been with the company since 1923. Mr. Baker has been a purchasing agent since 1932.

Combustion Engineering-Superheater Inc., New York, appointed **F. J. Murphy** general purchasing agent; **B. A. Anderson,** production manager; and **Myron F. Freeman,** manager of the service and erection department.

Walter M. Wells Jr. was named to head the San Francisco branch, **Clary Multiplier Corp.,** and **Richard D. Dodge** to head the newly created Oakland, Calif., branch.

George J. Madge was elected comptroller, **American Can Co.,** New York.

William E. Olds was appointed assistant vice president-sales, **Standard Railway Equipment Mfg. Co.,** Chicago. In the railway equipment business many years, Mr. Olds was with American Car & Foundry Co.

D. J. Richards, vice president of sales, **E. F. Houghton & Co.,** Philadelphia, was placed in charge of all domestic and foreign sales activities. He succeeds the late **G. W. Pressell,** former vice president and director of sales. Mr. Richards will also act as director of advertising and will supervise activities of product development and sales development departments. **John F. Maisch** was appointed controller of the company.

Hyatt Bearings Division, General Motors Corp., Harrison, N. J., appointed **H. R. Gibbons** chief engineer in charge of product design, research, application and service engineering. He succeeds **O. W. Young,** who assumes new duties as technical assistant to the office of the general manager. Mr. Gibbons has been assistant chief engineer for the last seven years.

R. E. Bansemer was appointed assistant general sales manager, **Koehring Co.,** Milwaukee, manufacturer of construction equipment. He has been a district sales representative. He succeeds **John E. Chadwick,** who joins Dalrymple Equipment Co., a Koehring distributor in Mississippi. **R. K. Patterson, C. Byron Walker** and **A. W. Schlosser** were named as new district sales representatives.

R. M. Brown, formerly sales engineer, Bristol Co. of Canada Ltd., and lately instrumentation engineer with Stadler Hurter & Co., Montreal, has rejoined the **Bristol Co.,** and is stationed in Baltimore.

George D. Martin was appointed assistant service manager, **Pemco Corp.,** Baltimore.

Charles R. Beeson was appointed vice president, **Ohio Stainless & Commercial Steel Co.,** Cleveland, distributor of carbon and alloy bars, sheets and other steel products. He has been associated with the company in various sales capacities since its formation in 1946.

Harold S. Hoover was appointed director of public relations, **Trailmobile Co.,** Cincinnati. He previously served in public relations with General Tire & Rubber Co., Crosley Corp., and Upson Co.

Geneva Metal Wheel Co., Geneva, O., appointed **Carl A. Nimz** chief engineer in charge of product development. He formerly was a manufacturing consultant engineer in New York.

Philip S. Klaesson has been placed in charge of the Chicago warehouse, **Super Steels Inc.,** Cleveland.

Dr. L. P. Seyb, since 1942 a chemist and group leader in the research department of **Diamond Alkali Co.,** Cleveland, was named manager of research. He succeeds **J. E. Underwood,** who becomes a research consultant for the company.

Landis O. Morris Jr. was assigned to the staff of **Tube Turns Inc.'s** Tulsa, Okla., office.

Calvin F. Coombs was appointed assistant general traffic manager, **Jones & Laughlin Steel Corp.,** Pittsburgh. He succeeds the late **Norman R. Heck.**

Interstate Machinery Co. Inc., Chi-

chairman of the RMA reorganization committee.

Gustave J. Rebsamen was appointed assistant secretary, **IBM World Trade Corp.**, foreign subsidiary of International Business Machines Corp., New York.

Paul C. Cabot was elected a director, **B. F. Goodrich Co.**, Akron.

J. Charters was appointed northern California sales district manager, **Turco Products Inc.**, Los Angeles, succeeding the late **A. Martinez. C. Williams** succeeds Mr. Charters as district sales manager, Houston division. Mr. Charters' headquarters will be in San Francisco.

J. Warren Shaver and **William Whigham Jr.** were appointed assistant vice presidents, industrial relations, **Carnegie-Illinois Steel Corp.**, subsidiary, U. S. Steel Corp., Pittsburgh.

Wilbur E. Becker was named assistant superintendent of **Hercules Powder Co.** plant at Mansfield, Mass. **Elmer F. Hinner** was appointed general manager of the company's Virginia cellulose department.

William R. Holmes was appointed Baltimore district manager, **U. S. Steel Supply Co.**, subsidiary of U. S. Steel Corp., Pittsburgh. He will succeed **Donald L. Ande**, resigned, and assumes his new duties Aug. 1.

E. A. Longenecker has resigned as president, **Le Roi Co.**, Milwaukee, and also as a director and general manager. He joined the firm in 1947 as president, and previously was president of the Lauson Division, Hart-Carter Co. **T. O. Liebscher**, executive vice president of Le Roi, will act as executive head of the company for the present.

WILLIAM J. MILLETT
. . . Holyoke works mgr., Worthington Pump

William J. Millett, assistant to the vice president of manufacturing, was appointed works manager of Holyoke Works, **Worthington Pump & Machinery Corp.**, Harrison, N. J. He will replace **E. M. Detwiler**, resigned.

Angus G. Sturrock, associated with **Wyckoff Steel Co.**, Pittsburgh, for 22 years, was named manager of its metallurgical division, and will have headquarters in Chicago. **Ford Dreves**, for the last three years in charge of metallurgy at the company's eastern plants, will continue in that capacity. **Edsel Bishop**, formerly with Carnegie-Illinois Steel Corp., was named metallurgist for the Ambridge, Pa., plant succeeding the late **Howard H. Smith.**

Norman F. Smith was appointed plant superintendent, **DeVilbiss Co.**, Toledo, O. For the last three years he was chief process engineer with Pyle National Co., Chicago, and served two years following the war as president, Namron Inc., Chicago.

George R. McAleenan has resigned as president and director, **McAleenan Bros. Co.**, Pittsburgh.

Arthur D. Whitmer, superintedent of the **Studebaker Corp.** truck plant, South Bend, Ind., was named manager of the new passenger car assembly plant to be constructed in North Brunswick township, N. J. **Lloyd E. Ransom**, general foreman of the truck plant since 1948, succeeds Mr. Whitmer.

George Eldred was appointed abrasive sales manager, **Micromatic Hone Corp.**, Detroit. He formerly was manager, eastern sales territory.

George D. Smittle was appointed district manager, Ohio Valley district, **Brooks Oil Co.**, Pittsburgh. Before joining Brooks he was superintendent of maintenance, Follansbee Steel Corp., Toronto, O.

Robert G. Leary, for the last 14 years associated with Eastern Stainless Steel Corp., Baltimore, and recently resigned as general sales manager, was appointed general sales manager, **Rigidized Metals Corp.**, Buffalo.

Karl L. Rothermund Jr. was appointed assistant sales manager, **Columbia Cement Division**, Pittsburgh Plate Glass Co. He succeeds the late **C. R. Steenburg**, and will have headquarters in Columbus, O.

Charles W. Bryan Jr. was elected president, **Pullman-Standard Car Mfg. Co.**, Chicago, subsidiary of Pullman Inc. He was formerly associated with Federal Shipbuilding & Dry Dock Co., of which he was vice president and general manager in 1948 when its Kearny shipyard was sold to the U. S. Navy.

OBITUARIES . . .

Henry S. Germond, 78, president, **Revolvator Co.**, North Bergen, N. J., designer and manufacturer of material handling equipment, died at his home in Tenafly, N. J., July 13. He had been president of the company for 40 years. As a pioneer in development of the material handling industry, Mr. Germond's contributions included a classification of hand trucks which remains today an important factor in the field of standardization.

James E. Callahan, 63, for 30 years purchasing agent, **Otis Elevator Co.**, Harrison, N. J., died July 11 after a long illness.

Arthur F. Hatch, 71, former president, **Stanley Works of Canada**, died July 12 in Hamilton, Ont.

Andrew S. Czapak, 35, chief engineer, **Volco Brass & Copper Co.**, Kenilworth, N. J., died of a heart attack July 9.

Hyman Breen, 65, president, **Breen Iron Works**, Hillside, N. J., died July 9 at his home in Newark, N. J.

Bertram R. Thomson, assistant purchasing manager, **Fedders-Quigan Corp.**, Buffalo, died June 30.

Charles Poller, 83, retired traffic manager, **Nordberg Mfg Co.**, Milwaukee, died July 14.

Millard H. Ronzone, 55, treasurer, **Copperweld Steel Co.**, Warren, O., was killed in a crash of a plane at Pittsburgh July 13.

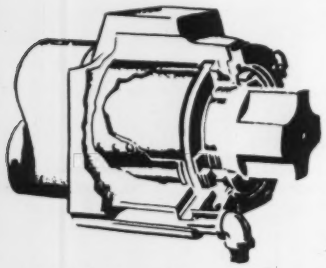
Walter W. McComb, 60, executive vice president, **Los Angeles Shipbuilding & Drydock Corp.**, Los Angeles, died July 8.

Charles A. Mault, 59, plant superintendent, **Rollway Bearing Co.**, Syracuse, N. Y., died July 10.

Jules Mathews, sales representative, **Spo Inc.**, Cleveland, died July 10.

Edward S. Atkins, 52, secretary-treasurer, **Los Angeles Steel Corp.**, Los Angeles, died July 8.

6 aids to improved lubrication, lower maintenance costs for rolling mill equipment



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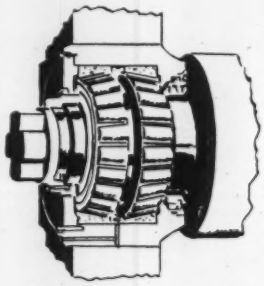

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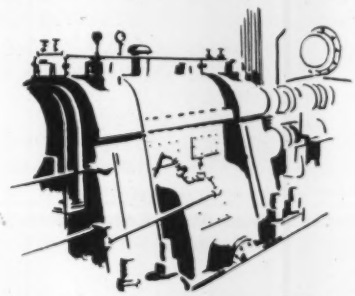

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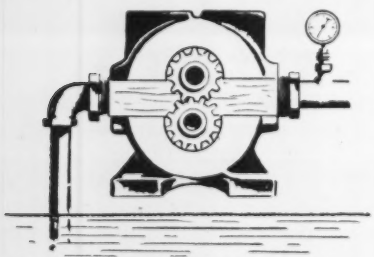

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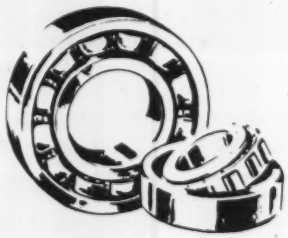

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Production AND Engineering
NEWS AT A GLANCE

GOOD "OLE" DAYS—PHOOEY— How many times have you heard the expression, "things were built in those days"? To duplicate the accurately machined and complex automobile of today by yesterday's hand-tool methods would be practically an impossibility. And if possible, costs and time required would prohibit mass production. An auto executive says that it would take a skilled tinsmith eight hours to make such a simple item as the top of a gasoline tank with hand tools. Today, a machine operated by three men can turn out 180 tank tops an hour at a cost of about 2½ cents each. If paid the same hourly rate as the machine operators, a tinsmith would receive $12 per tank top. An entire auto would cost you more than $50,000.

FROGS DRILLED IN A HURRY— Twelve holes varying in diameter from 13/32 to 21/32-inch are drilled in a plow frog at the production rate of 120 pieces per hour by a new machine developed by Davis & Thompson Co., Milwaukee. The machine uses four rotating power heads, each with independent hydraulic feed and spindle speed change gears for the operation. Because of the location of the holes, an electrically interlocked feed and return stroke are provided to permit one head to move in position behind another—only after its interlocked unit is in position. Workpiece is clamped by a single hydraulic clamping fixture.

"POT" SIZE MAKES DIFFERENCE— Case hardening is a big production operation at Bassick Co., Bridgeport, Conn. Practically all of its hundred tons per month of casters, hardware and other small parts go through Homocarb cyaniding furnaces much faster than they did a short while back when salt pots were in the picture. The three big units are responsible for boosting cyaniding production by 59 per cent, at the same time cutting heat treating cost to one-third of what it used to be. The furnaces take big loads running 400 to 600 pounds. Each handles over 70,000 pounds of parts per month.

CASH FROM RUST— Although steel plants don't like rust because it is so fine that it blows out of blast furnaces, they buy a certain amount of it through necessity. Most commercial rust comes from railroads where it is accumulated when cars and locomotives are scraped for repainting. One big road markets anywhere from 1000 to 2000 tons of the powdery stuff a year, and receives $3 to $16 a ton for it, according to *Compressed Air Magazine*. Although most rust recovered ends up in blast furnaces, small amounts are added to quick-hardening cement. Strange to say, it also is an ingredient in a rust-proofing compound.

PRESSURE NO OBSTACLE— A new one-coat hammer effect finish that can be sprayed on metals at the same pressure as regular enamels is reported by United Lacquer Mfg. Corp., Linden, N. J. The finish was developed to overcome manufacturers' complaints that hammer effect obtained with previously available finishes varied with techniques used by different sprayers. Baking time of the new coating is 300° F for 20 minutes in a gas oven, or eight minutes under infrared lights. It air dries sufficiently for handling in one hour.

DOES IT PAY? — When you are speaking of induction heating as a method of heating for forging and forming, a little analyzing is in order. Sure it costs more. But how do you account for the fact that in recent years electric induction heaters have been applied more and more frequently as a means of reducing heating costs and speeding production. Advantages derived must more than offset the disadvantages. Otherwise no one would use a method in which one Btu of heat delivered costs about 70 per cent more than that obtained by other media. (p. 58)

GETS CHROMIUM SHEET — New process developed by the U. S. Bureau of Mines' Northwest Development Laboratory, produces ductile chromium sheets—a metal that can be easily bent and cut when heated above 932° F. According to W. J. Kroll of the bureau's lab, alloys made with the new grade of chromium hold possibilities for industrial use. The metal is very corrosion resistant. It also is readily cut on a lathe providing it is not subjected to bending. (p. 61)

THREE-MINUTE JOINTS — Silver soldering some parts of Packard's Ultramatic transmission is a three-minute operation. Low-melting silver alloy applied in form of rings plus induction heating play important roles in the procedure. It takes about 100 seconds to bring the parts up to temperature necessary to melt the solder and cause it to flow by capillary attraction into the joint. Total cycle time, including loading, heating and unloading is about three minutes. (p. 62).

FAST KNITTING—Fine wire filter elements for automobiles are made at a fast rate by Letraw Mfg. Co., Chicago. To make these products the company machine-knits some 30,000 pounds of 0.005 to 0.011-inch diameter wire per week—which in terms of fine wire is a considerable amount. Actual knitting is a fast operation. Once a machine is running and motor speed adjusted, flattening and knitting of the wire is entirely automatic. (p. 65)

How To Evaluate

Induction Heating For Forging

If you want to weigh your chances of cutting heating costs and accelerating your forging and forming production by using induction heating, first take a good look at your product and operations. Then balance induction heating's higher first cost and other less favorable aspects against its many advantages

IS INDUCTION heating economically justified for your particular forging or forming operation? You'll never know for sure until you analyze the job from every angle, taking into account several vital considerations.

In recent years, electric induction heaters have been applied more and more frequently as a means of reducing heating costs and accelerating production. This in spite of the fact that one Btu of heat delivered to the work costs approximately 70 per cent more by induction heating than by furnace heating. Against this higher energy cost and the greater first cost of the equipment must be balanced the various advantages of induction heating.

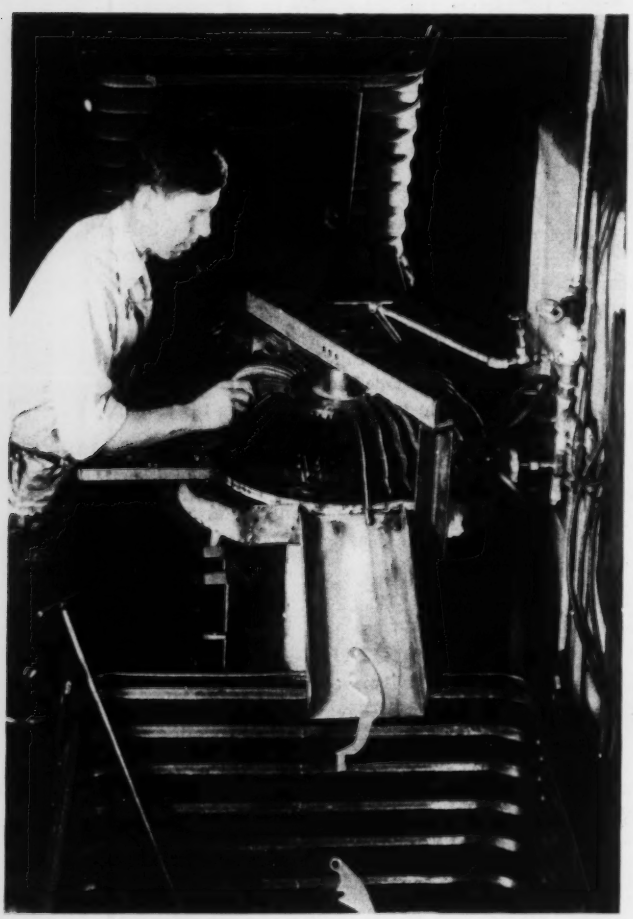


Fig. 1—Annealing automotive brake arms prior to the forming process

Current Induced in Metal—All induction heaters, irrespective of the frequency, depend for their operation on the fact that a current is induced in the metal to be heated. An inductor coil, referred to as the work coil, is wound about the piece to be heated and energized by means of the induction heater, which is essentially a source of a-c energy. The resulting alternating magnetic field induces current flow in the part, causing it to heat by I^2R losses. In the case of ferrous metals below the Curie point, additional heating is caused by hysteresis losses; however, the bulk of the heating is caused by the induced eddy current flow.

Frequencies can range from as low as 60 cycles to several million cycles per second, depending upon the type of equipment and the requirements of the job. The most common frequencies in commercial use are 9600 cycles and 400,000 cycles. An inherent characteristic of eddy current flow is that the depth of penetration varies with the frequency, depth decreasing as the frequency is increased. For example, the theoretical depth of penetration in steel is approximately 0.020-inch at 9600 cycles, but only 0.003-inch at 500,000 cycles. It can be seen that even at the lower frequencies the eddy current flow is confined largely to the surface, and that the interior of the material is heated by conduction from the current carrying layer.

Energy Input Rate Higher—One might expect that this shallow penetration of the eddy currents would work against induction heating as a cost saving device. However, it must be remembered that a conventional furnace delivers heat only to the surface, and does not generate it even in the surface layer of the material itself.

With induction heating, by virtue of the fact that the heat is developed directly within the metal itself, a much higher rate of energy input can be achieved than by radiation or transfer from heated gases. As much as 20 kw per square inch can be delivered to the material, if required. This corresponds to a heat flow of better than 1100 Btu per square inch per minute, a rate which is considerably in excess of that attained in the best furnaces.

As mentioned above, the energy is transferred to the work by means of a relatively simple coil into

ng, Forming

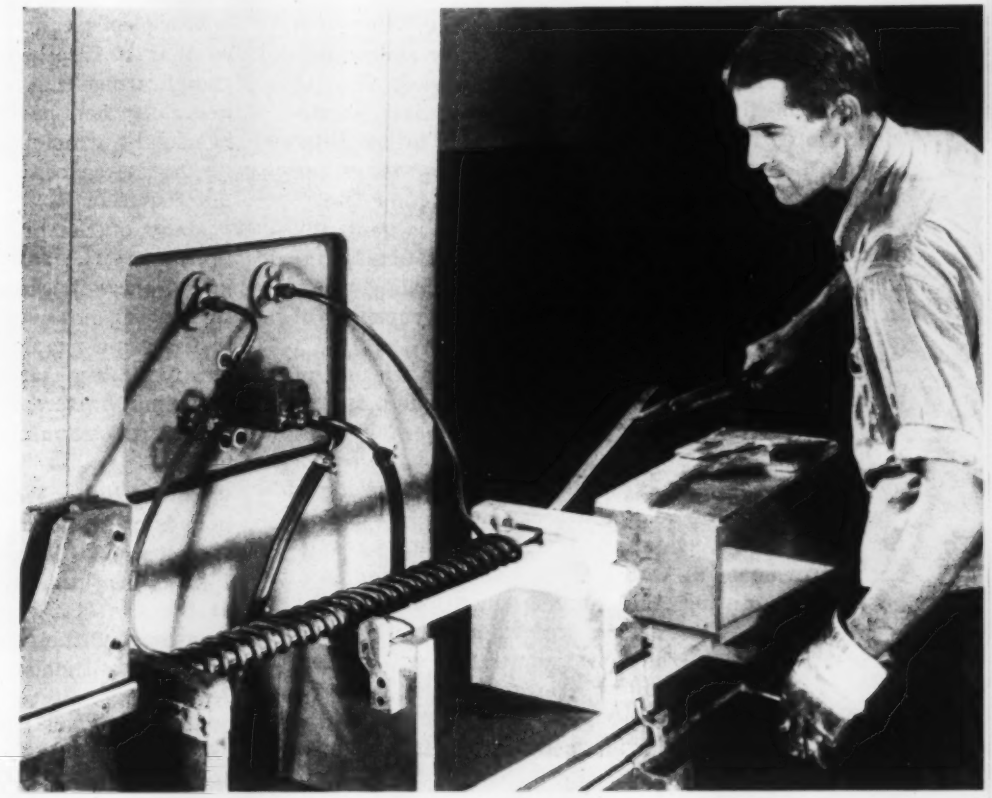


Fig. 2—Induction heating strip stock for bending in spring manufacture

which the work is inserted. The coil itself is generally water cooled and is operated at room temperature. It is consequently unnecessary to maintain a large oven at an elevated temperature, with the consequent losses. All commercially available equipment is provided with such timers and controls as are necessary to make the operation virtually automatic. It is, therefore, unnecessary to provide highly skilled operators for the heating part of the forging or forming process.

Various Power Sources—The inductor coil can be energized from any of the following sources: 1. Transformers at 60 cycles; 2. motor generators for frequencies up to 9600 cycles; 3. spark gap oscillators for frequencies up to 400,000 cycles; 4. vacuum tube oscillators, providing frequencies up to several million cycles.

Type of induction heater best suited to the job depends in part on the size of the piece. For example, bar stock 2 inches in diameter will call for a motor generator set operating at approximately 9600 cycles, whereas a piece ½-inch in diameter or less will probably be most efficiently heated by means of an electronic induction heater. There is considerable overlap between equipment types as far as frequency range is concerned, so that the final choice of equipment frequently depends upon factors other than frequency.

Work Flow Uninterrupted—Induction heating lends itself well to multiple position operation, so that even with very large pieces, an uninterrupted flow of work can be delivered to the forge. In many cases it is possible to choose the equipment size so that the heating time is equal to the forging time. With larger pieces requiring a longer heating period, it is possible to have two or more pieces heating simultaneously so that there is no idle forge time.

All types of induction heaters can be placed in operation in a few minutes, eliminating the need for extensive warming up. Similarly, at the end of a production cycle the equipment can be shut down, if desired, with no loss of energy. However, the standby power taken by an induction heater is small, so that very little loss occurs if the equipment is left on during standby periods.

Scale Almost Eliminated—Perhaps one of the most significant advantages of induction heating is the almost complete elimination of scale. Steel will lose up to 6 per cent of its weight due to the formation of scale during conventional heating, which means a loss as high as 120 pounds per ton. With some of the alloy steels costing as much as 5 cents per pound, this represents a loss of approximately $6 per ton. In addition to the saving in steel, elimination of scale will materially increase die life. This increase in die life is rather variable, since a number of other factors are involved. Under favorable conditions, however, die life has been tripled.

A corollary advantage of scale elimination is the production of pieces to closer tolerances. This does not represent a saving in the forge shop, but reflects itself in lower machining costs.

Because of the selectivity of induction heating, it is possible to control closely the amount of metal to be heated and the total amount of heat delivered to the metal. This also contributes to closer tolerance in forging and, therefore, makes it possible to operate with less flash. In many cases the reduction of the flash saves as much as 50 per cent of the weight of the forging.

From data prepared by the induction and dielectric heating apparatus section, National Electric Manufacturers Association.

Heating Cycles Short—Since the heat energy is developed very rapidly in the work, very short heating cycles are possible, permitting a steady flow of the material through the plant. In many cases, particularly with smaller parts, it is possible to utilize automatic work handling equipment so that the forge can be operated as a part of the production line.

Space required by an induction heater is generally about one third of that required for a furnace of equivalent capacity. This feature is particularly useful where it is desired to increase the capacity of an existing forge plant.

An increasingly important advantage in the use of induction heating for forging and forming is the improvement in working conditions. There is very little heat associated with the operation of the equipment, since the heat is developed in the piece itself. The elimination of heat and occasional fumes makes for better employee working conditions, with a resulting improvement in both quality and production rate, particularly during the summer months.

Additional savings are realized whenever it becomes necessary to shut the forge down for any reason. There is no need to allow a large amount of metal to soak, with consequent scale formation, while the necessary repairs or adjustments are being made to the forge.

Lower Setup Costs—Rapidity with which an induction heater can be placed in operation makes it unnecessary to expend a large amount of fuel in preparing the equipment for use. This feature of induction heating is of particular advantage where the forge shop is not operating on a 24 hour day-seven day week schedule.

Setup costs can be decreased materially, since a few pieces can be very easily heated to try the dies. Ease in controlling the heated area and in obtaining uniform heating combine to simplify the setup procedure, and to provide a degree of flexibility not ordinarily characteristic of forge work.

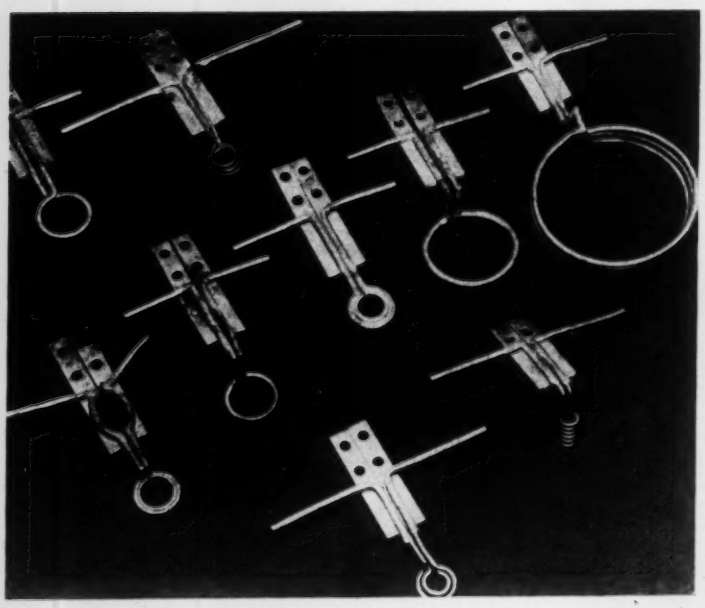


Fig. 3—These are typical work coils for heating cylindrical pieces

Work coils can be changed in a matter of minutes so that it is possible to handle short runs without complicating the heating operation. Coil design is generally not particularly critical, since the work is usually symmetrical, and is to be through heated, so that close control of the depth of penetration is not required.

Many of the problems present in forging are not present to the same degree in forming because the latter operation is basically somewhat more simple. In general, however, induction heating has essentially the same advantages as in forging. Of particular benefit is the virtually automatic operation of an induction heater, making it relatively simple to integrate the forming operation into production schedules.

Power Suits Work Piece—Between 4 and 7½ pounds of steel can be heated to forging temperature and up to 15 pounds to annealing temperature, with 1 kwhr of output power. The rate tends to decrease as the size of the piece increases and the time cycle lengthens. Principal loss from the piece is radiation, which is a function of both temperature and time. An average rate of heating for most pieces handled on a production basis is approximately 6 pounds of steel heated to forging temperature per kilowatt-hour. Heaters are available in sizes up to 1250 kw output, so that it is possible to heat upwards of 3½ tons of steel per hour to forging temperature with a single unit.

Coil Design Sets Heating Uniformity—Coupling of the coil to the work should be sufficiently close to load the heater fully, but should not be so close that there is danger of shorting out some of the turns, with consequent destruction of the coil. Couplings 1/8-inch to 3/16-inch are quite practical in production work. Sufficient turns should be provided to insure full loading with this coupling.

If the piece is irregular in shape, both the coupling and the shape of the coil should be adjusted to insure uniform heating. It is not necessarily good practice to attempt to heat all varieties of shapes in a cylindrical coil.

Rate of heating per piece should conform to the requirements of the job. For example, if the pieces are small and the production rate is high, several should be heated at one time so that the heating time is two or three times longer than the forging or forming time to prevent the power input from becoming too high.

Prevents Overheating—This will insure uniformity, and will prevent overheating of the outer layers. Because of the ease with which large amounts of heat can be developed in metal, it is possible to melt the surface before the interior of the piece is heated appreciably.

In general the coils can be fabricated from annealed copper tubing or bar stock, which are both readily procurable and easily worked. Confinement of the heat to the required area is achieved by control of coil dimensions. Heat control for forging and forming is not nearly so critical as for case hardening, so that the minor irregularities which may creep into a tubular coil are not particularly serious.

NEW PROCESS
Produces Ductile Chromium Sheet

Heated above 500° C, chromium sheet produced by a new method can be bent and cut as easily as mild steel

CHROMIUM sheet produced by a new method can be easily bent and cut when it is heated above 932° F. Developed by the U. S. Bureau of Mines' Northwest Development Laboratory, Albany, Ore., the process for making ductile chromium was revealed at the Electrochemical Society's 97th meeting in Cleveland earlier this spring.

Alloys made with this grade of chromium metal may be of industrial use. This fact was pointed out by W. J. Kroll of the bureau's laboratories.

Such chromium is very corrosion resistant and is difficult to dissolve in hydrochloric acid because of its purity. It tarnishes lightly when heated in air to 1000° C (1832° F).

Other properties cited for the ductile chromium were ease of machining and the readiness with which it can be cut on a lathe providing it is not exposed to bending. Its hardness was reported to be in the order of Rockwell B 60. The microscope reveals but few inclusions which are not located at the grain boundaries and might be oxide. Etching of the metal is difficult and it is necessary to use electrolytic methods.

Considering the great softness of the metal above 500° C, and its low Rockwell B hardness at room temperature, it does not appear probable that it will be used to any large extent as a material of construction for highly stressed machined parts at room or at elevated temperatures. Fig. 1 shows a rolled sheet of ductile chromium metal; one end was bent hot, 180 degrees, and the other end cut and bent hot.

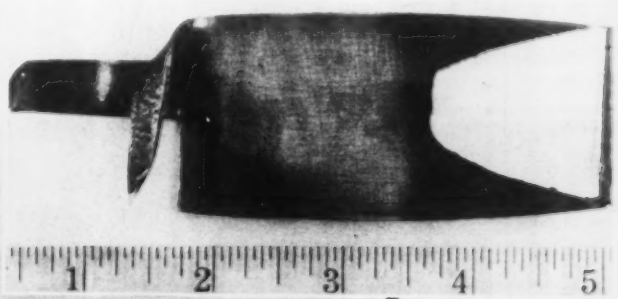
Two Production Methods—For the production of ductile chromium the Bureau of Mines' investigators reported that metal made by aqueous electrolysis of the hexavalent salt or by reduction of the chloride with magnesium may be used. Both metals, if correctly prepared are very pure, the oxygen content being the main contamination.

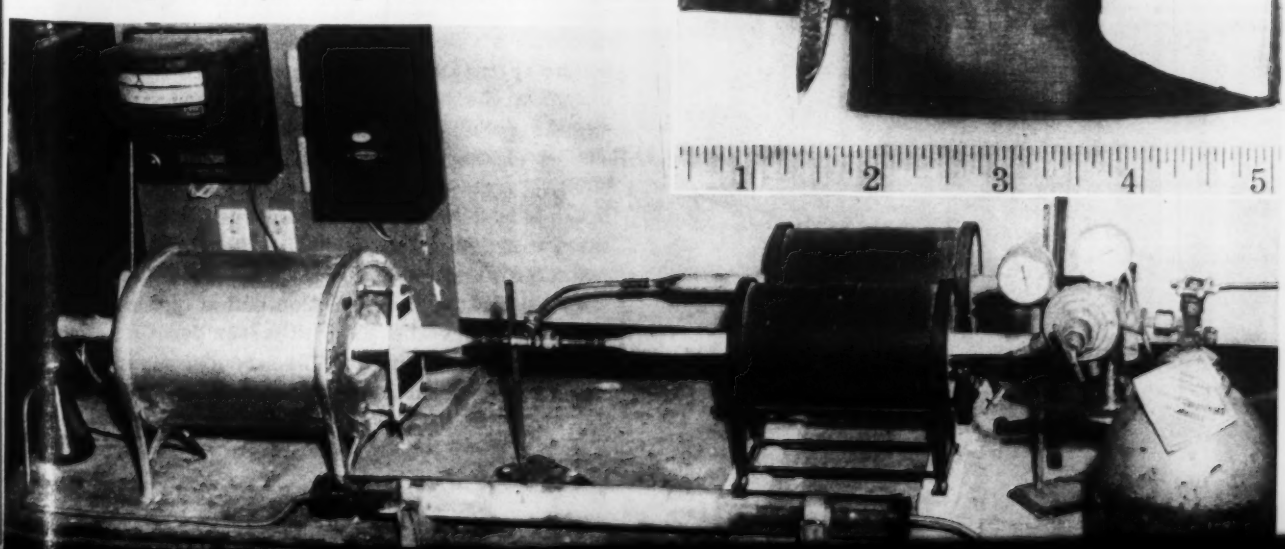
Chromium made by the reduction of the chloride with magnesium showed only traces of such impurities as iron, aluminum, and silicon. Using this method, low oxide chromium was made by reduction of chromium chloride in a carrier salt with magnesium under helium, and separation of the magnesium chloride and excess magnesium by evaporation in a vacuum at elevated temperature.

Magnesium Oxide Formed—The metal cake obtained is in the form of a light, loose, gray sponge which is composed of fine dendritic crystals when observed under the microscope. Handling of the salts in air before the reduction, results in a pickup of some moisture, which reacts with the magnesium turnings while heating, forming magnesum oxide. It was reported that this magnesia could react back with the chromium when heating the metal in a vacuum, as in sintering, to a higher temperature than the one used in the reduction, liberating magnesium and chromium oxide up to a certain equilibrium depending on temperature and pressure.

Magnesia is eliminated from the sponge by digestion with cold, dilute nitric acid. In the vacuum separation of the salts at 900° C, the chromium metal agglomerates slightly by sintering and it passivates to some extent so that the nitric acid used in magnesia elimination does not attack the metal visibly. A metal produced by reduction of the oxide or chloride with magnesium is attacked, if directly put through a leaching treatment with nitric acid, and

Fig. 1 (right)—Rolled ductile chromium sheet, one end bent hot 180 degrees, the other end cut and bent hot
Fig. 2 (below)—Hydride and reduction furnace arrangement for producing ductile chromium





a black colloid is formed. The metal powder obtained by drying, which follows the magnesia extraction, is submitted to a reduction treatment in dry hydrogen to eliminate traces of oxide that may remain.

Special Furnaces Used—Fig. 2 shows the setup of special furnaces used to generate and circulate high purity hydrogen to deoxidize the chromium powder. It operates by the principle of alternately heating and cooling zirconium hydride, which also acts as a getter.

Two hydride furnaces are used; one heating up to release dry, nitrogen-free hydrogen, and the other one cooling down to absorb and purify the hydrogen coming from the reduction furnace after passing through a drying agent. It was recommended that the reduction of chromium oxide in the chromium powder be conducted at temperatures as high as possible, considering that much more moisture can be tolerated in the waste gases if the temperature is high.

Metal Powdered—When starting from electrolytic chromium, the metal is first ground to less than 65-mesh. The powder is treated in the hydride furnace for three days at about 1000° C, at which temperature sintering was reported to be negligible.

The lightly caked, reduced powder is ground, briquetted at 20 tons per square inch pressure, and sintered in a high frequency furnace at about 1300° C in a vacuum. This procedure was also stated to remove gases.

The soft ingot is compressed cold in a die in which it fits loosely so as to bring about a material movement which closes voids. It was reported that the metal is quite plastic in this state, despite the fact that sheets made by hot rolling from this material cannot be bent cold. The ingot is resintered in the high-frequency furnace in a vacuum. However, it was recommended that preference be given to sintering at 1300° C in the hydrogen furnace, followed by a vacuum treatment.

Vacuum sintering is not recommended because heating compact chromium in a vacuum above 1400° C results in breaking up the bond between the grains by selective evaporation along the grain boundaries.

Sintered Ingot Sheathed—The sintered ingot is sheathed in an iron sheath and pressed hot at 800° C, to one-third of its original height. After this, the plate obtained is rolled at 800° C with reductions of 10 per cent. The iron sheath is cut off with a shear after cooling and any residual iron is removed by pickling with nitric acid.

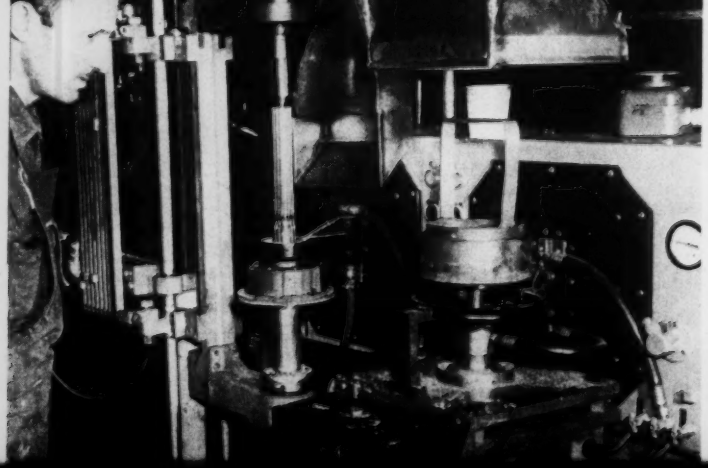
Transmission Parts

Silver Soldered By Induction Heat

EXCELLENT silver soldering is done on parts for the new Packard Ultramatic transmission, using induction heating. These joints are made with a low-melting silver alloy applied as wire in the form of rings that fit grooves machined at the joints.

In one of these, illustrated, a splined output shaft is soldered to the hub of the planetary case. Hub splines are 1½ inches long and a close fit on the shaft splines. A circumferential groove next to the splines on the shaft holds the ring of silver solder which, when melted, runs into the joint.

Setup in a Tocco machine for silver soldering splined output shafts in the mating hub of a planetary case. About 20 assemblies an hour are soldered. In setup at the right, a steel ring is silver soldered at bottom of clutch housing recess. Coil heats parts in the soldering area to 1525° F in about 74 seconds



For soldering, the shaft splines and hole are coated with flux and are then set vertically on centers in correct relative position in a Tocco machine. The parts are then elevated so the induction coil surrounds the hub. It takes about 100 seconds to bring the parts up to the temperature necessary to melt the solder and cause it to flow by capillary attraction into the joint.

Current is automatically shut off when the desired temperature is reached and the assembly is then lowered and removed by hand. Total cycle time, including loading, heating and unloading is about 3 minutes. Excellent joints result. The operator can flux the next pair of parts while the prior assembly is heating.

In a similar setup, at the other end of the Tocco machine, a steel ring is silver soldered at the bottom of the recess of a clutch housing. The ring of solder is set in the bottom corner, the steel ring having a slight step whose diameter slips inside the solder ring. The steel ring is a slip fit in the hole and its lower surface seats against the bottom of the hole. When heating is done (after fluxing the parts, and putting them together) the solder flows both around the ring diameter and under its lower face.

In this setup, the induction coil is outside the housing and raises the joint area temperature to about 1525° F in approximately 74 seconds. Current is then shut off and the soldered assembly ready for removal.

More Zirconium Coming Up!

Laboratory experiments described here represent a first approach to a continuous method for making sponge zirconium. Bureau of Mines' pilot plant produces 300 pounds of metal per week

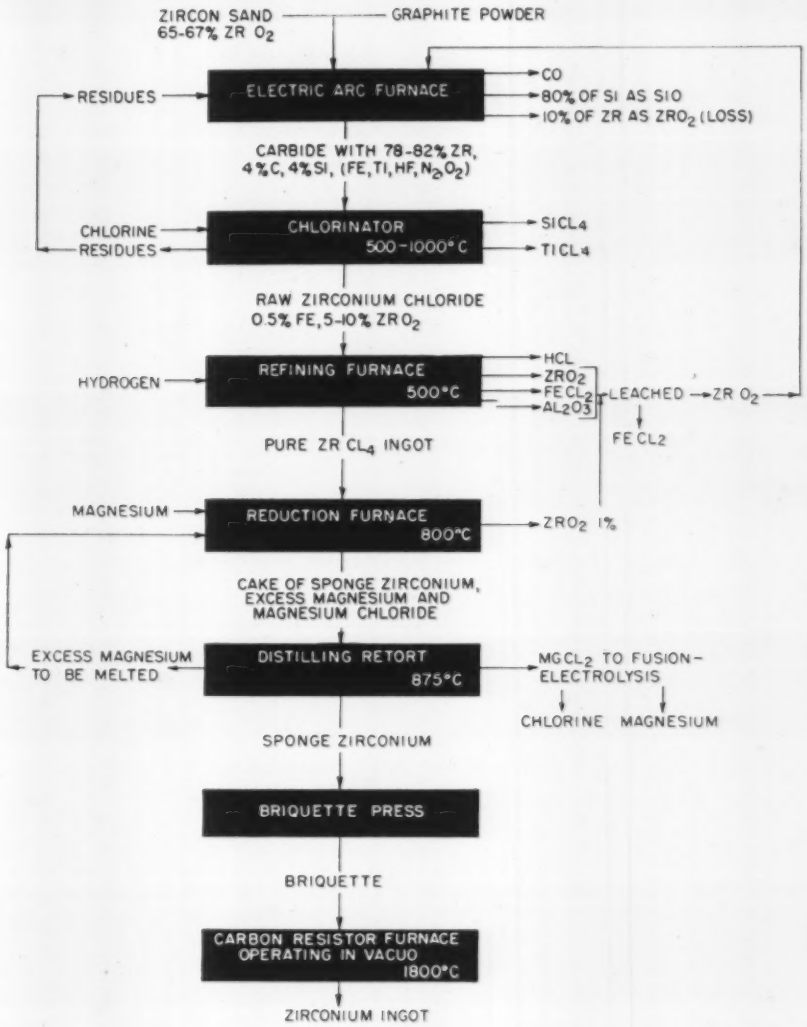


Fig. 1—Flow sheet for production of zirconium metal by U. S. Bureau of Mines process

CONTINUED interest in and expanding demand for zirconium metal is resulting in improved methods for producing the metal in greater quantity. Within about four years, a Bureau of Mines' process for reducing gaseous anhydrous zirconium chloride with magnesium under helium, has developed from test tube to pilot plant producing regularly 300 pounds of metal per week.

Present and Potential Uses—According to W. J. Kroll, Bureau of Mines Laboratory, Albany, Ore., zirconium's present and potential uses must be mentioned separately. Also, a distinction must be made as to the form in which it is or may be applied. either as cold malleable metal or as alloy or compound. Price considerations and chemical as well as physical properties are the determining factors for its possible uses. Production cost of the metal will certainly approximate closely that of titanium, which is, however, more easily available in the ores.

Present uses for malleable metal, Dr. Kroll says, are few because, up to recently, it could not be obtained in large quantities and at low cost. Small quantities of wire and sheet are used in Europe in radio tubes, where the combined getter and emission properties are appreciated. Also, a little is sold as bone screws and plates for surgery, as an equivalent for tantalum, because tissues grow on the metal which is neutral to body fluids.

Future uses of the malleable metal are expected in chemical industries for the construction of chemical equipment because it resists the attack of nitric and hydrochloric acids and of alkalies of all concentrations and temperatures. Sulphuric acid up to 60 per cent and 100° C does not react. Storage battery acid does not alter zirconium.

May Be Used in Fluorescent Lights—Sheet zirconium may find applications in fluorescent lights because it is neutral to mercury and getters, thus extending tube life considerably. Since zirconium wets graphite, linings of this metal on graphite can be obtained. These permit making direct metallic contacts between carbon and metallic parts—for instance, in rectifier tubes.

Zirconium powder may be used as getter in radio tubes, but the hydride is currently preferred because it is less pyrophoric. Zirconium-bearing aluminum al-

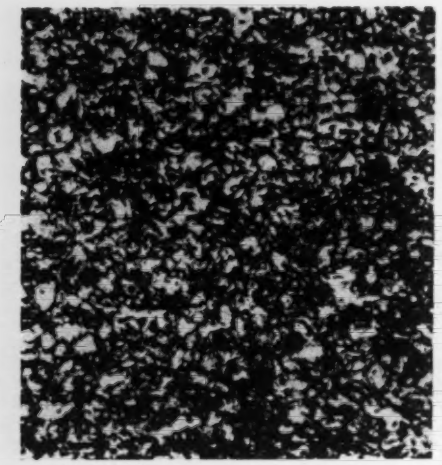


Fig. 2 (left)—Zirconium heated in hydrogen 800° C, 24 hours. Etchant: Vilella's reagent. X250

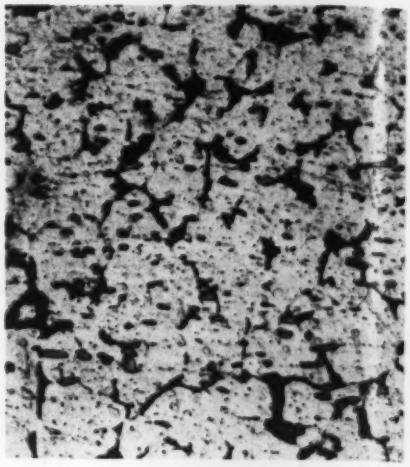


Fig. 3 (right)—Zirconium heated in hydrogen 800° C, 24 hours, than 700° C 6 hours in vacuum. Etchant: Vilella's reagent. X250

loys are recommended for photo-flash lights in oxygen filled bulbs because of their higher light output. Magnesium zinc alloys are considerably improved by addition of 0.65 per cent zirconium. The grain is refined; the elongation and tensile strength are increased while the corrosion resistance is greatly improved.

Binary copper zirconium alloys are age-hardenable. A combination of valuable electrical and mechanical properties can be obtained by addition of other elements.

Would Be Good Steel Cleanser—At present the steel industry uses zirconium master alloys, especially the cheap silicide, to some extent. The outstanding chemical activity of the element, if it could be controlled, would open large uses for it as a cleanser. Too much zirconium is lost when it is introduced in steel, either by reaction with the refractories and slags or by burning in contact with the atmosphere. Furthermore, some of the zirconium in the master alloy is not available as free element for cleansing, since it is already tied up in the alloy as either nitride or oxide.

Supposing that zirconium could be reliably introduced in steels, its action, as shown by a very extended literature, would be outstanding. It is one of our best desulphurizing and deoxidizing agents and, besides this, it ties up nitrogen and carbon, forming nonaging steels. Titanium is less active than zirconium as a cleanser, but it forms a stronger carbide. The particles formed by zirconium in a steel, mainly nitrides, oxides and sulphides, produce nuclei, and therefore this element is reputed for its good grain refining properties. It is also added to steel in boron "dope" alloys because of its intensive deoxidizing action.

Good Nodulizing Agent—Zirconium has been recognized lately as a nodulizing agent for graphite in cast iron, probably because it is such an efficient desulphurizing agent. It is also a slightly graphitizing agent when used in small quantities in cast iron. Large amounts of it eliminate carbon by formation of Fe_3Zr_2, in which carbon is not soluble. Zirconium forms eutectics, melting as low as 900° to 1000° C with most iron group metals, and such alloys may facilitate its introduction in steels and cast iron.

Zirconium produces steels that are hardenable by precipitation if enough nickel is added. Since zirconium has a very high affinity for iron it is suggested as a neutralizing agent for iron in a great many metals, especially in aluminum. Any excess of this reagent in this metal forms, however, a strongly exothermic aluminide.

Other Applications Seen—Extremely high temperatures can be obtained by burning comminuted zirconium in oxygen since the metal and its oxide are much less volatile than aluminum or magnesium and their oxides.

Zirconium carbo-nitride, which is readily made in the arc furnace from cheap zircon, can be used to produce oxide for refractories by burning it in air. The boride is said to have some future in jets.

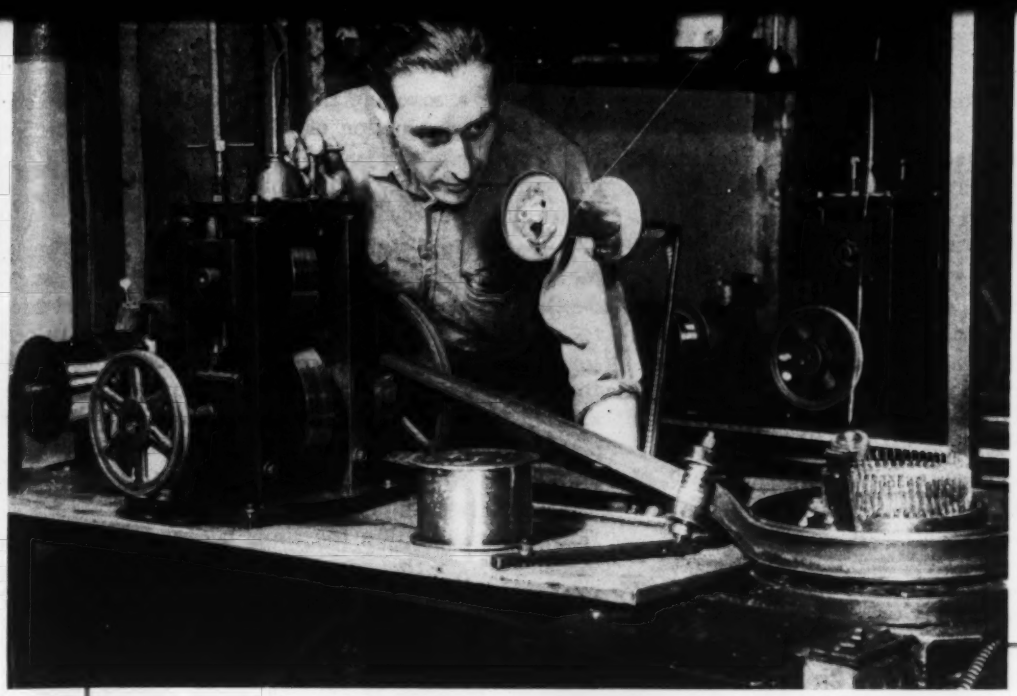
A gold zirconium alloy may replace platinum iridium in fountain pen tips because of its hardness and corrosion resistance.

Recent improvements described by Dr. Kroll before the Rare Metals Symposium of the 97th meeting, American Electrochemical Society concern three phases of the flow sheet, Fig. 1. One of these was the purification step in which the raw zirconium chloride powder is treated with hydrogen to reduce the iron trichloride to the less volatile diform, followed by sublimation of the zirconium chloride and its condensation as dense chloride on water cooled coils, suspended from the top of the apparatus.

As a result of these recent studies it was reported that raw zirconium chloride powder can be purified on the spot by reaction with hydrogen at about 200° C (392° F). The gaseous chloride can be transferred through a heated pipe and stopcock to a separate reaction vessel which can be much shorter, since no space has to be used for coils and condensate.

Cost per Pound Cut—It was pointed out that this makes the reaction crucible readily accessible for stirring of the batch as well as for filling in fused magnesium after tapping the salts, in view of continuing the run. Dr. Kroll indicated that the tapping of the magnesium chloride does not offer any difficulties and the syphon used for this purpose worked with no trouble. In this way, the crucible capacity could be used for two or even three consecutive reductions, with a corresponding lowering of the cost of production per pound of sponge zirconium.

Another point brought out (*Please turn to Page 76*)



Photographs by Dan Reebel

Fig. 1—One of 55 machines which knit steel and copper wire into long lengths of stocking-like material. Knitting cylinder is at right, flattening rolls at left. Unit has adjustable-speed drive. Wire passes under the spool-like guide, upwards through a top guide and then downward into the knitting cylinder

Knit Wire Finds New Applications

From a desire to make a better pot cleaner has sprung a tidy little 40-man business which knits about 30,000 pounds of 0.005 to 0.011-inch steel and copper wire each week on 55 special machines

By E. F. ROSS
Chicago Engineering Editor, STEEL

FROM pot cleaners to automotive air filters and automobile ice carpets! This is the product and manufacturing story of Letraw Mfg. Co., Chicago, which some 15 years ago was established to knit steel and copper wire in much the same fashion as wool and cotton stockings were knit.

Enjoying a progressive growth for its products, the company currently knits 30,000 pounds of 0.005 to 0.011-inch diameter wire per week, which in terms of fine wire is a considerable amount. Equipment includes 55 knitting machines.

Special Knitting Machines—According to H. N. Wartell, president, the idea for knitting wire sprang from a desire to market a better pot cleaner. The first knitting machine was imported from Germany. This was redesigned and improved. Now the company builds all its own machines.

One of the knitting machines is shown in Fig. 1. It consists essentially of a spindle for holding a spool carrying from 12 to 15 pounds of galvanized steel or copper wire, a pair of hardened steel rolls for flattening the wire as required, guides for conducting the wire to the knitting head; a reel underneath the machine bed for coiling the flattened stocking-like knitted product, and a variable-speed motor drive.

The motor is belt-connected to a counter shaft which in turn drives the reel and flattening rolls, the latter through sprockets and chain. A belt from the lower flattening roll drives the knitting head, as shown in Fig. 1. Pressure of the rolls is adjustable from that required merely to pull the wire from the spool to an amount that will flatten the wire to the thickness specified. From the rolls the wire passes under a spool-like guide and upwards through a top guide and thence downward into the knitting cylinder. The spool-like guide is an electrical contact which keeps the machine running while the wire is touching it. Should the wire run out or break,

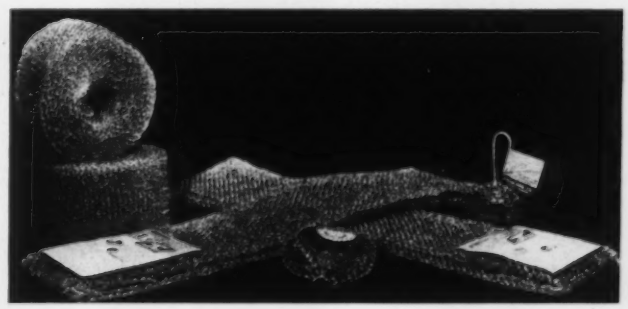


Fig. 2—Products made from knitted wire. At the left are two air filter elements; in the center is a pair of automobile traction mats, all made of galvanized steel round wire. The smaller objects are two types of flattened copper wire pot cleaners

the electrical contact is interrupted and the machine shuts down automatically.

Automatic Operation—Once a machine is running and motor speed adjusted by the operator, flattening and knitting of the wire is automatic. One operator attends several machines, replacing spools of wire and removing reels of knitted product.

Knitting cylinders of all machines are of a standard diameter but their needles vary in number from 25 to 60. Stitches can be lengthened or shortened to make various sizes of loops. The number of needles and sizes of loops determine the closeness or openness of the knitting. From the bottom of the knitting head, the product emerges in a flexible tubular form like a stocking approximately 6 inches in diameter. It collapses to a flat condition as it is conducted to and wound on the reel. When the roll on the reel reaches desired size, the knitted material is cut with scissors, the roll removed and a new one started.

Flattened for Sharp Edges—Pot cleaners for consumption in the United States are all made from copper wire; for export, galvanized steel wire is used. The wire always is flattened to provide sharp edges which have more scouring effectiveness than round wire affords. From knitting machines, the rolls of fabric are taken direct to an assembly line where specified lengths are cut off, tied in the middle, the ends rolled back over themselves and the open end sewed together with wire. Two types of pot cleaners are shown in Fig. 2.

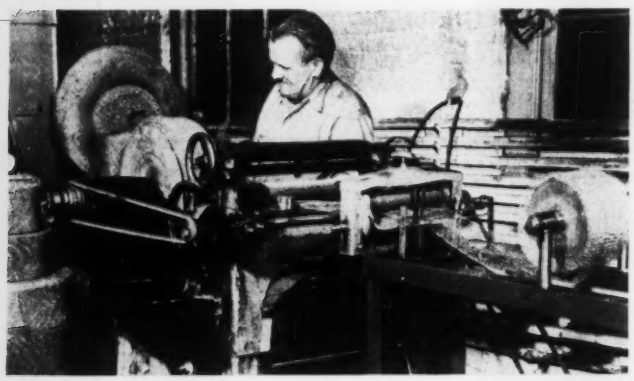


Fig. 3—Knitted wire for making air filter elements and automobile traction mats is crimped in this machine which at the same time sizes it to width. Depth of crimping can be varied

Used as Filter Elements—One of the more recent uses for knitted wire is as the filter elements in oil bath air filters and breathers of the automotive and industrial types. The air filter elements are made from round galvanized steel wire. Originally, copper wire was used for this purpose. Filter elements for breathers, however, are made from flattened copper wire. Both air filter and breather elements are produced to customer specifications, these including size of wire, size of mesh, core diameter, outside diameter and height.

Before knitted wire was utilized for filter elements, the practice was to hand form filter balls from 0.009-inch diameter steel wire which was double crimped in a machine that also tangled it into long skeins. The production of filter balls by this method had become an art. Today it is said that knitted filter elements perform a better job, can be produced more uniformly to specifications and cost less.

Perform Dual Role—Wire filters are used in automotive and industrial air filters where the great depth of filter requires a product with sufficient body to hold its shape. They have a dual purpose to perform. Primarily, they must entrap dust entering the filter and, secondly, they must also serve as a reservoir for excess oil drawn into the filter by action of the air flowing through the cleaner.

Cleaners are designed to provide oil in the filter for adequate cleaning at very low air flow. At higher flow, more oil enters the filter because of the higher velocity of air flowing over the oil. Function of the filter wire in the upper portion of the filter space is to catch and hold the oil at high air flow and thus prevent it from being drawn into the engine.

Wire Diameter Important—Wire diameter has a direct bearing upon cleaning ability, also upon cost. Within practical limits, it is stated that filters of finer wire have greater cleaning ability. From the standpoint of cost, price of wire per foot decreases with diameter down to a size of approximately 0.009-inch by virtue of the reduced weight per foot. As wire is drawn smaller than this size, processing costs increase steeply, and the net cost increases as the size decreases. For this reason, it has been necessary to strike a practical balance between air cleaner cost and performance.

In adapting knitted wire to air filter use, it was found that if the long stockings of fine wire are passed through crimping rolls they can be wound into rolls or elements with a degree of uniformity impossible to attain with the most skilled hand forming of filter balls from crimped tangled wire. Furthermore, cost is reduced because the high uniformity of the knitted product permits the use of less wire. Still another advantage is its superior ability to retain oil at high air flow.

Cost Down—More recent improvements in methods of forming filter elements of knitted wire and mass production have brought the cost of this material down considerably. A filter knitted from 0.007-inch wire has surpassed handmade filters in both cleaning ability and oil retaining capacity. Light weight of these filters brought net cost of most sizes well below that of hand-formed wire units.

Knitted wire also has made possible introduction of 0.005-inch diameter wire as a filtering medium. This is strictly a premium product because of the high cost of the finer wire, but it finds use in applications where a need for high cleaning efficiency exists. This is introduced as a thin roll occupying the lower 2 inches of the filter space. Balance of the filter, which acts mainly as a reservoir for oil, consists of the less expensive 0.007 or 0.009-inch diameter wire.

Crimping Operation — The operation of crimping knitted wire for use in making filter elements is shown in Fig. 3. Rolls of wire are fed through a pair of power-driven (*Please turn to Page* 79)

How Truscon Handles 80-Foot Steel Angles

Fabricating long, clear-span trusses for commercial buildings calls for plenty of ingenuity in handling and positioning

HANDLING steel angles up to 80 feet long is a routine job for Truscon Steel Co., Youngstown. The structurals are used in the fabrication of clear-span trusses for commercial buildings such as garages and shops where columns restrict use of floor space.

Angles are racked along one side of the work stand by overhead crane. Jig for holding component parts of the trusses occupies the other side of the stand.

Angles Air-Positioned—To load the jig, a worker flips two lengths of angle iron from the holding rack and they slide down bars over other levels in the rack to become positioned on five jig-loading arms spaced along the work stand. One man then operates an air switch to power several cylinders that flip angle iron into the jig.

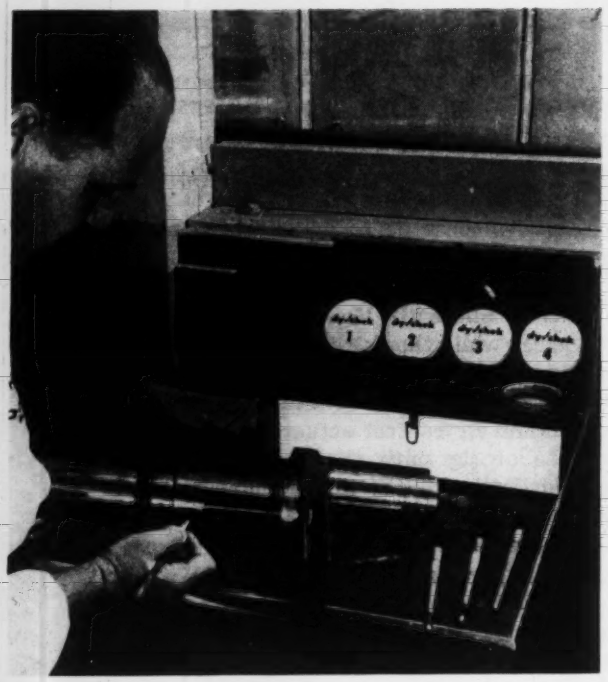
These air cylinders (the number varies according to length of different work stands), are hung on central pivots that allow the loading arms to move about 90 degrees while flipping the angle into the jig. When the angles are in the jig, hot-rolled rounds are positioned for tack welding into the truss structure, and another air control actuates cylinders that push one side of jig until the components of the truss are held firmly for the tack welding process.

Jigging and Welding Simplified—After tacking, the jig is opened, and the crane moves the truss to another work stand for finish welding. With this method of handling the cumbersome lengths, the truss can be jigged and tack-welded in several minutes, with three or four welders doing the job.

On one such jig, with a capacity of 80-foot maximum truss length, four air cylinders for the loading arms are 4½ inches in bore with an 18-inch stroke each, and the smaller cylinders that tighten the jig are four in number, 2½-inch bore with a 1-inch stroke. Four-way air controls are used.

Fig. 1 (below)—Angles are slid from rack, left, onto loading arms for jig along right side of work stand. After insertion of component rounds, the jig is tightened by small air cylinders and the whole truss is tack welded as shown

Fig. 2 (right)—Close-up of air-powered cylinder on central pivot that permits loading arm to swing about 90 degrees to flip angle into jig



Low-Cost Inspection Method Finds Metal Surface Flaws

Simple, accurate, dye penetrant technique employs inexpensive, portable equipment to detect minute surface openings in ferrous and nonferrous metals

Fig. 1 — Inspection of precision machined parts using the small kit. Jar No. 1 contains surface cleaner and die remover; No. 2 is the red die, shown here being applied by brush. After the die is allowed to dry for a few minutes, it is removed through the use of surface cleaner and die remover from jar 3. Jar 4 contains the white developer. Once it is applied, scarlet lines will appear wherever cavities or cracks occur in the part being inspected

CRACKS and other flaws too small to be seen even with a magnifying glass can be picked up by a new metal inspection process which depends upon the controlled use of red dye, together with other liquids. Applied to the surface of the suspected metal, the die causes a crack or other surface discontinuity to "bleed" telltale scarlet lines which emerge against a white background.

Developed by the Turbodyne Corp., a subsidiary of Northrop Aircraft Inc., Hawthorne, Calif., the so-called Dy-Chek process was used originally in the rapid inspection of gas turbine engines. For the last 18 months, the method was tested at Turbodyne and at various weld shops, foundries and forging plants.

Difficult-to-inspect metal parts of complex shape and varying cross section are the process' particular "meat".

Simpler Than Simple—Chief advantages claimed for the new technique are its relative inexpensiveness —no elaborate equipment is required; its simplicity; its application to both ferrous and nonferrous metals; its portability; and its accuracy.

The method is applicable to mass production inspection of parts under factory conditions. It can also be used by a single mechanic or inspector in examining parts in the field. For instance, the crankshaft of an engine may be inspected without removing the part, if it can be seen and reached.

Put On and Wipe Off—The nontoxic, noncorrosive red dye penetrant is applied to the surface of a suspected part and allowed to stand for 5 minutes. It is then wiped off with a special surface cleaner and dye remover, and a white "developer" solution applied.

Any surface openings existing in the part can then be detected by the presence of fine red lines or dots created as the red dye—possessing

Fig. 2—This complex assembly, part of an aircraft control system, was inspected and found to contain a defective weld at the point that is indicated here by the probe

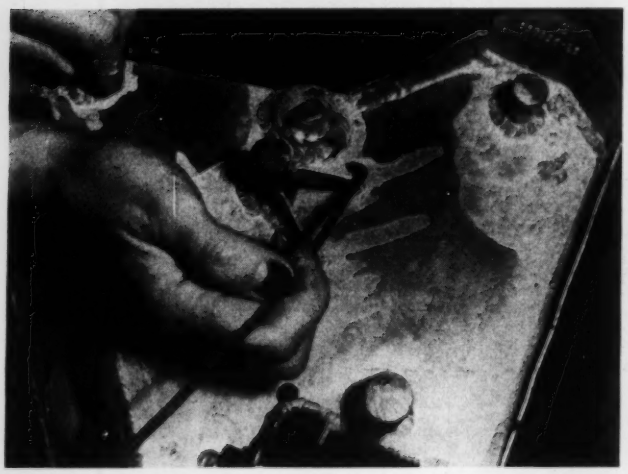
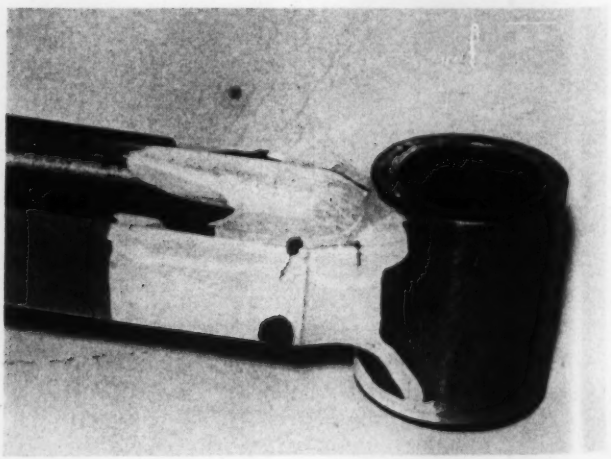


Fig. 3—This connecting rod appeared sound when subjected to visual inspection. Application of the new method revealed defects indicated by the telltale "bleed" lines



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Regardless of what you are figuring, at the blue print stage or just looking for fabricating cost saving opportunities, it will be worth your time to investigate Thinsteel. One big advantage of this precision cold rolled strip steel is the greater yield you can count on—controlled close tolerances that assure more feet per pound, more finished parts per ton. Long coils, too, (up to 300 lbs. per inch of width) provide longer runs on your automatic press equipment—less costly down-time. And for regular or unusual physical specifications and finish, edges, etc., you'll find rigid adherence to your needs in coil after coil to reduce rejects and scrap and lengthen die life. Your inquiry will prove our interest in your cold rolled strip steel problems.

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extremely high capillary action—is drawn from the fissure by the developer.

More than "Skin" Check—The dye is applied by any convenient method—brushing, spraying or dipping. According to Turbodyne engineers, any inspector or skilled mechanic can be quickly trained in the use of this dye penetrant method. With experience, they say, a technician becomes able to estimate the size and probable depth of the defects revealed.

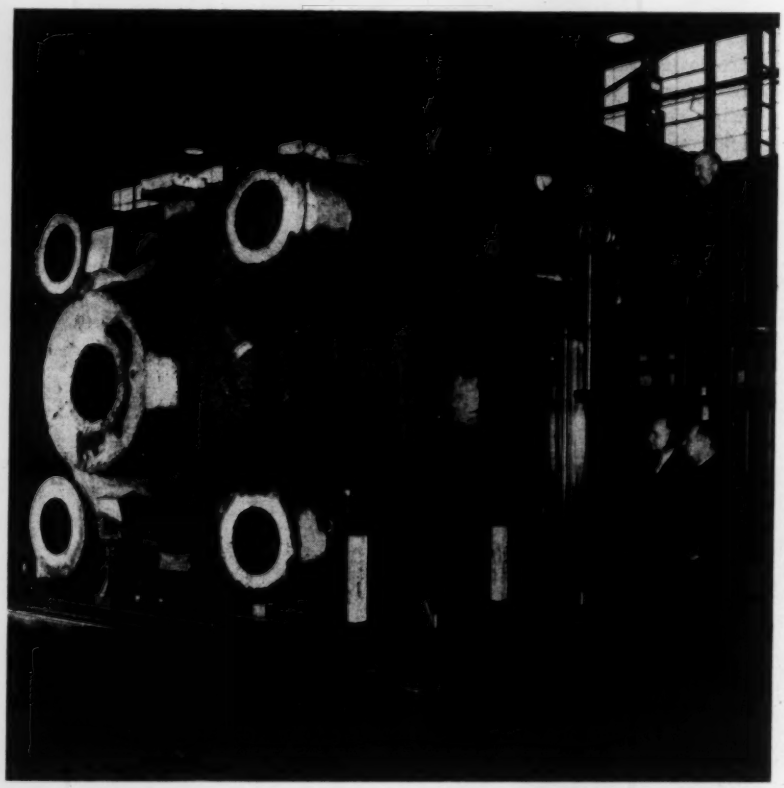
Lesson in Center Lapping

EXTENDED service life is usually obtained from diamond impregnated carbide laps, used for lapping the centers in such hardened steel and nitrided products as shafts, rolls, taps, reamers, gages, etc. Such laps usually perform best in materials of more than Rockwell C-62 (over Brinell 600). Most common usage is for correcting out-of-round conditions due to warping in heat treatment, for removing scale or small burrs from centers, and for truing up incorrect angles.

Carbide laps may be used with good results either on special center lapping machines or on improvised drill setups, according to Carboloy Co. Inc., Detroit. Stock to be center lapped is usually held by hand with one end of the workpiece resting on a center in the base of the machine or table. The lap is fed down slowly by hand with moderate pressure and usually is revolved at from 1500 to 5000 rpm. The operation is usually performed without lubricant.

By reconditioning carbide center laps before wear becomes too pronounced, only a few thousandths stock will have to be removed, the company advises. This is said to greatly prolong the service life of the lap.

Reconditioning of laps may be by regrinding to the desired angle on a tool and cutter grinder, using a soft bond silicon carbide wheel of about 80-grit size. The user is warned not to attempt to redress carbide center laps with a diamond dresser, as is done with ordinary mounted abrasive points or sticks.



ONE OF THE LARGEST: Castings weighing up to 170,000 pounds each are to be machined on this giant horizontal boring, drilling and milling machine built by G. A. Gray Co., Cincinnati, O., for Hydraulic Press Mfg. Co., Mt. Gilead, O. Pictured is a 97,500 pound cast steel cylinder for a HPM hydraulic press being machined. Weighing 175 tons, the machine (see also STEEL Aug. 1, 1949, p. 81 and Sept. 26, 1949, p. 41) has a table measuring 9 x 20 feet

Press Blanks Clutch Rings

SPECIAL bending press of 300-ton capacity blanks out clutch rings, clutch gear teeth and special flat blanks for S. K. Wellman Co., Cleveland. Designed for two-man operation, the machine has an air-electric clutch control with a 4-position selector switch for long or short, continuous or inching strokes.

Two sets of control buttons are provided, one set on the front of the machine and the second set at the rear. They are so arranged that the operators have to depress both sets to put the machine in motion, yet either may stop the machine if he so desires. Machine speed is 25 strokes per minute. Shut height is 14 inches and throat depth is 18 inches. The bed measures 3 feet from front to back and 4 feet between tie-rods. According to the press manufacturer, Cleveland Crane & Engineering Co., Wickliffe, O., tie-rods, which are incorporated for additional rigidity, can be lifted up out of the way so that the entire length of bed may be utilized. Longer guides and larger bearing area are provided for punching service.

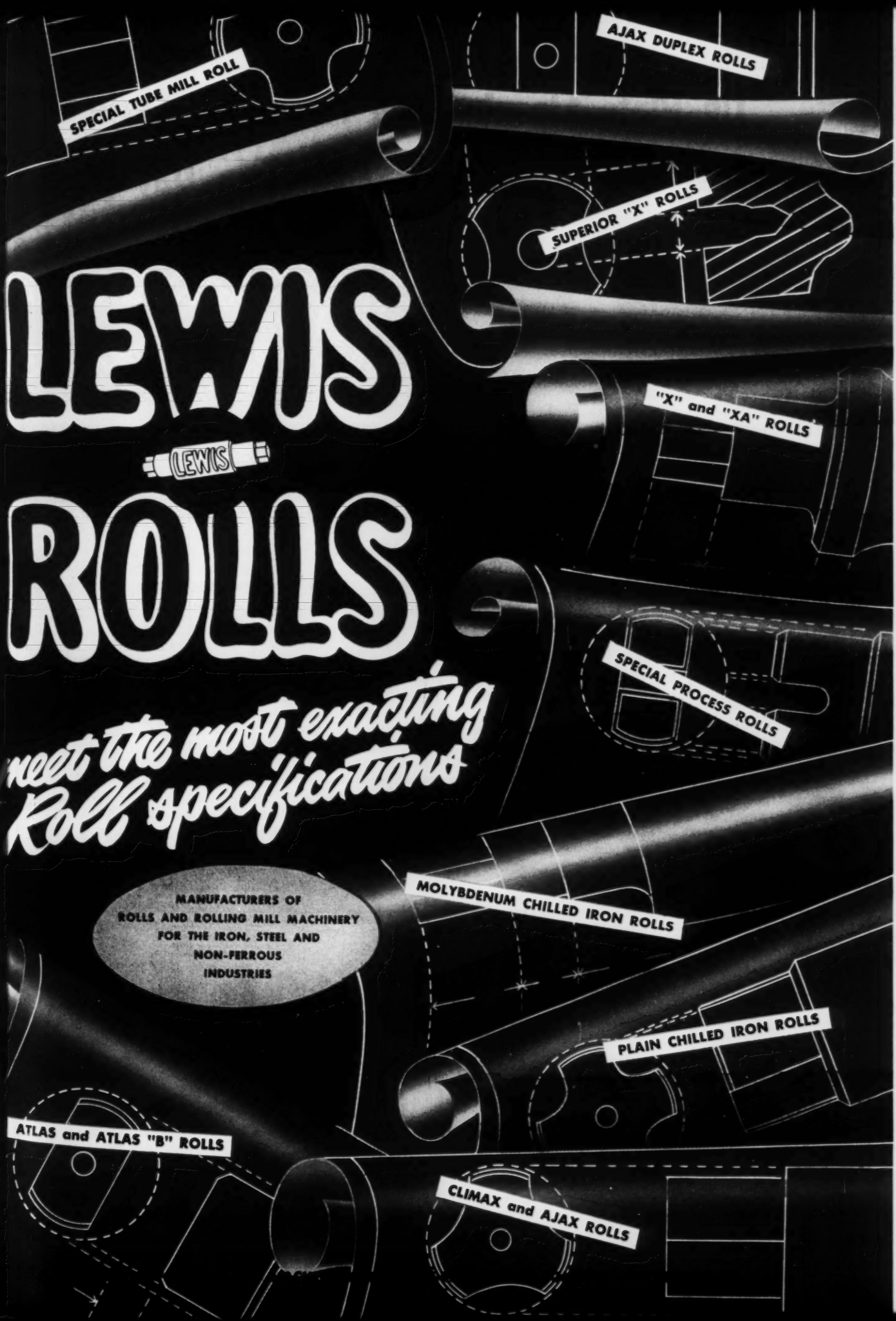
Tubing Answers Problem

OPERATION at 1450° F for 1 hour frequently damaged fixtures used for heat treating small parts after only one to seven runs through the furnace. When it was possible to salvage these fixtures, additional time was required for straightening for reuse.

After fabricating new fixtures of type 304 stainless tubing made by Carpenter Steel Co., Reading, Pa., fixture life was increased to over 500 runs. Savings resulting from longer life and elimination of time required for straightening amounted to about $1500.00 per month.

Lists Welding Works

PUBLISHED in answer to requests for information on published works in the welding field and those fields contributing to the science and art of welding is Engineering Experiment Station circular 51, "Holdings in the A. F. Davis Welding Library", which is available from Department of Welding Engineering, Ohio State University, Columbus. The list of titles, although not a complete bibliography of the field, is intended to assist corporations, individuals or other libraries in using the Davis library or in building their own.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Tin Plate Cleaning and Annealing Cycle May Be Cut to Less Than Two Days

Method of continuously cleaning and annealing tin plate strip will permit tremendous reduction of in-process inventory, closer control of physical properties and surface conditions of the steel

By ALFRED E. KADELL

Manager, Tin Plate Department
Weirton Steel Co.,
Weirton, W.. Va.

PRESENT planning by the tin plate producing indus.ry toward development of continuous annealing combined with cleaning as one uninterrupted operation gives promise of reducing the complete cycle to less than two days.

This will permit a tremendous reduction in inventory necessary to be carried in process. Closer control of physical properties in the strip and in the surface conditions may also result.

With the present method of annealing tin plate, the cycle of heating and cooling up to the point of removal of the inner covers consumes a period of almost four days. Cooling from this point to room temperature, to permit further processing, takes as much as two days for large 30,000-pound coils. Thus about six days are required in the entire annealing operation.

New Installations Planned—Several installations of continuous strip annealing combined with cleaning are being planned, at the present time, in the tin plate industry. The accompanying illustration, in a general way, typifies the planning trend. Two uncoilers are used at the entry end of the line so that there will be an uninterrupted flow of steel. As soon as the coil on one uncoiler becomes unwound, a new coil is ready and waiting on the second uncoiler to be welded to the end of the first one. While this is being done, the entry looper rolls descend, supplying the necessary strip to keep a continuing movement of the steel through the annealing section of the production line.

The cleaning is done in a vertical arrangement in order to conserve space in the line. After cleaning, the strip passes through the entry looper which acts as a reservoir of steel strip to keep the annealing section of the line in continuous operation while the cleaning section stops to make a weld.

Strip Makes Vertical Loops — In the heating furnace the strip makes a series of vertical loops, and while doing so is subjected to radiant gas heat.

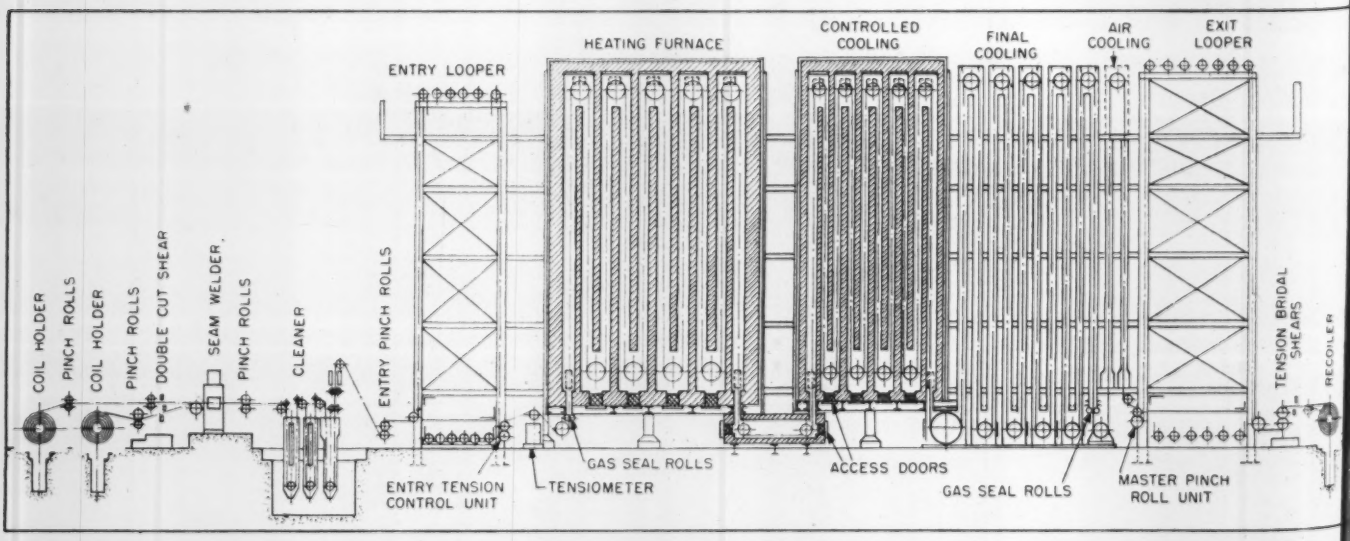
The desired final strip temperature is controlled by heat input and line speed. From the heating furnace the strip passes through the controlled cooling section where it is cooled comparatively slowly to a predetermined temperature.

It then enters the final cooling zone where its loss of heat is rapid and from which it emerges at a temperature slightly under 300° F into the air cooling zone. By the time it reaches the winding reel, the strip has cooled down to considerably below 200° F.

The controlled deoxidizing atmosphere is maintained in the heating and both cooling sections in order to produce a bright surface on the strip.

The exit looper acts as an accumulator of the strip by its top rolls moving upward when the winding reel must be stopped to remove the coil at the moment the latter has attained full size.

Continuous cleaning and annealing line for tin plate strip



MAINTENANCE CUT

Several Thousand Dollars Per Year with **KAOCAST**

Photographs courtesy Ford Motor Company

A large automobile manufacturing firm found that high temperatures and severe operating conditions were playing havoc with the doors of their 15-ton electric furnaces. Run 16 hours a day, 5 days a week, these furnaces are poured every 2½ hours and are charged twice during each cycle. With a good grade of firebrick, furnace door linings lasted an average of only two or three days before replacements were necessary.

A trial installation of KAOCAST—the B&W high temperature Refractory Castable—was made. The KAOCAST doors stood up two to three weeks . . . *five to eight times longer than firebrick.* As a result, doors on all electric furnaces of this type are now lined with KAOCAST. *Savings in maintenance are running into thousands of dollars per year.*

Your B&W Refractories Engineer will be glad to show how KAOCAST will cut your furnace operating cost. Write or call him today.

KAOCAST, easy to use as ordinary concrete, can be mixed in mortar box or concrete mixer.

Shell of furnace door, cleaned, ready for installation of KAOCAST.

Shoveling KAOCAST into place. KAOCAST can also be poured like ordinary concrete, plastered in place, or applied with a cement gun.

B&W REFRACTORIES PRODUCTS

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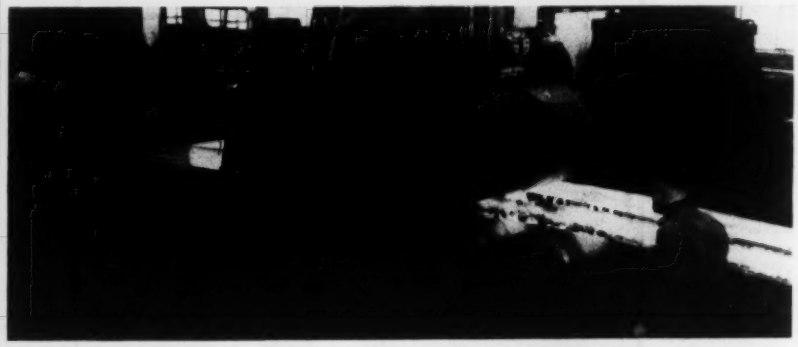
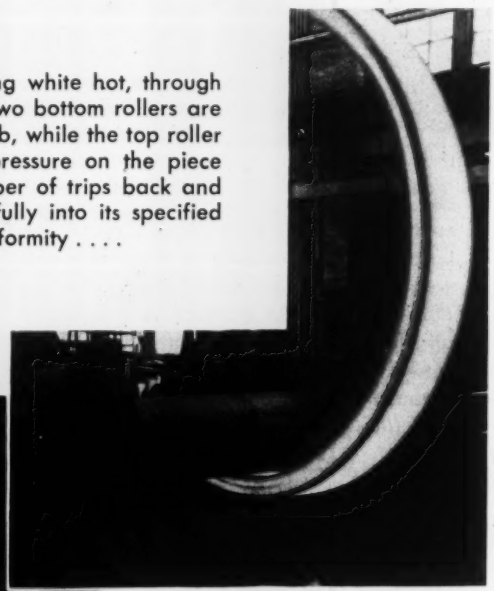
R-339

Stator Frame Rolling — A Hot Job

PRODUCING stator frames at General Electric Co., Schenectady, N. Y., is a hot job. Slabs for the frames, intended for motors and generators made by the company's Large Motor and Generator Divisions, come from a 36-foot furnace at a temperature of 2012° F, hot enough to make spectators mop their brows 25 feet away. Rolling out of the furnace on a flat car, the slabs move into position for processing as shown in the accompanying views.



CRANEMAN and crane follower act quickly to keep the steel at rolling temperature. Huge hooks move the slab into position between the rollers. Man at the right directs the rolling; his helper is at his left. The control man in the background . . . .



STARTS the slab, still glowing white hot, through the rolls for a third pass. Two bottom rollers are power driven to carry the slab, while the top roller adjusts vertically to bring pressure on the piece and shape it. After a number of trips back and forth, the slab bends gracefully into its specified form and has its uniformity . . . .

MEASURED by means of a template. With the rolling almost completed, the steel is so hot that checking the diameter of the piece still calls for protection from the intense heat being radiated. When the correct diameter is reached, the frame is removed from rolls to cooling floor

How to Rate Your Employees

A MANUAL on merit-rating techniques, published by American Management Association, New York, explains how to rate subordinates and how to evaluate other men's ratings of those they supervise. Principles and procedures detailed in the manual, entitled, "Rating Employee and Supervisory Performance," apply to a wide variety of industrial, white-collar and professional employees in both large and small companies

Guide is intended to increase the effectiveness of present rating systems and can be used as a blueprint for redesigning a program or for setting up an entirely new program.

The 14 authorities represented cover various phases of the subject.

The best material so far published by the association on the subject is included. A specially prepared section reproduces 26 selected merit-rating forms in current use in business and industry, and analyzes the various approaches generally utilized in evaluating personnel.

Explains Time & Motion Study

USING both the serious and humorous approach, a booklet being distributed to workers of SKF Industries Inc., Philadelphia, is intended to give wider employee understanding of time and motion study, a subject frequently the center of industrial controversy. The 16-page booklet explains the means of determining the quickest and best method of doing a specific job in down-to-earth language and relates its importance to the company's success.

Entitled "Why Time Study?" the booklet is liberally illustrated and occasionally pokes fun at the time study engineer. It asks the reader to think of himself as the owner of a business and points out what he must do if he is to remain competitive, make a profit and employ people.

You Should Fall for This

FALLS are one of the most serious of industrial accidents, according to the National Safety Council, Chicago. How they occur and how to prevent them are shown in a new safety graph, a visual aid for training small groups, offered by the council. Consisting of 12 spiral-bound pages measuring 18 x 24 inches, the presentation, when set on a flat surface, opens to form an easel. Colorful cartoons and duo-tone photographs, along with a safety talk for the instructor, present the message to the employees.

How COSTS were CUT 40%

IN THE PRODUCTION OF THIS STEEL SCREW

...by replacing a .40 Carbon Alloy Steel with STRESSPROOF

This cylinder sleeve puller screw was originally made of .40 carbon alloy steel at a cost of $1.364 per part. By changing to STRESSPROOF furnace-treated bar stock, the manufacturer was able to cut his steel cost, eliminate heat treating, and reduce machining time. As a result, the cost of the finished part dropped to $.818—a net saving of 40%.

STRESSPROOF has made similar savings in hundreds of other cases. Here are four reasons why: 1. STRESSPROOF eliminates heat treating—its *in-the-bar* strength is twice as great as ordinary cold-finished shafting; 2. STRESSPROOF eliminates case hardening—its resistance to wear as machined is sufficient to replace many heat-treated or carburized steels; 3. STRESSPROOF has *in-the-bar* machinability fully 50% better than that of heat-treated alloys of the same hardness; 4. STRESSPROOF is stress-relieved—assuring an absolute minimum of distortion. And yet, this bar costs little more than ordinary cold-finished carbon bars. Available in cold-drawn or Ground and Polished finish.

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More Zirconium Coming Up

(*Concluded from Page 64*)

was that cast iron is a better construction material for the reaction crucible than mild steel, since it can be used in contact with sponge zirconium at temperatures exceeding considerably 940° C (1724° F). At this temperature a fusible zirconium carbide barrier is produced on the surface of the cast iron wall, thus obstructing the diffusion of iron into the zirconium and vice versa.

Sees Continuous Production—Other work concerned the salt distilling or salt separation step in which the magnesium chloride formed in the reduction is separated from the zirconium sponge obtained by fusion and evaporation in a vacuum of about one micron. Dr. Kroll pointed out that these laboratory experiments should be considered as a first approach to a continuous method for producing sponge zirconium.

Heat Resistance Studied—In view of the interest in the corrosion resistance of zirconium metal, studies conducted in the Bureau of Mines' laboratories on the heat resistance of zirconium were reported by E. T. Hayes, A. H. Robertson, and R. H. Robertson. This work was concerned with the behavior of the metal in atmospheres of carbon monoxide, carbon dioxide, sulphur dioxide, hydrogen, propane, and steam, at elevated temperatures. Heat resistance was determined on the basis of weight gains, metallographic structures, and tensile properties. Results obtained by the workers in the various systems are summarized below:

Carbon Monoxide — Weight gains and tensile strengths of zirconium heated in carbon monoxide at temperatures from 600° to 1000° C (1112 to 1832° F) show a maximum is reached in the specimens heated at 800° C (1472° F). From the standpoint of a corrosion rate of 0.1-inch per year of zirconium as an upper tolerance limit the metal should not be heated above 900° C (1652° F) for one hour or 700° C (1292° F) for 24 hours. Tensile data indicate that maximum properties were developed in the specimens heated at 800° C for 24 hours.

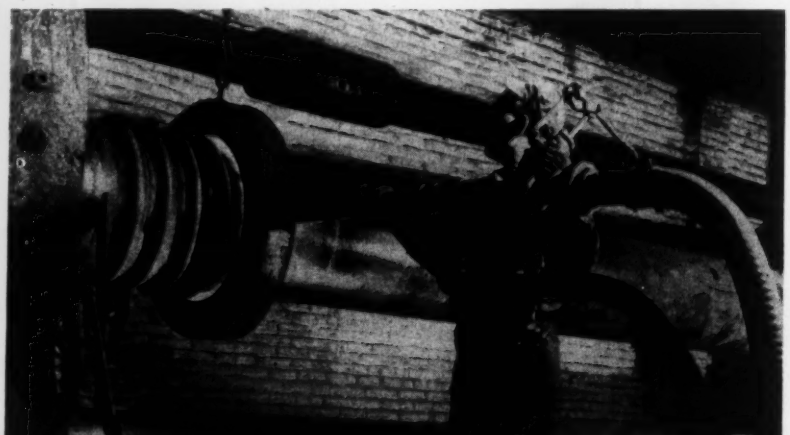
Carbon Dioxide—Weight gains for this system present an irregularity at 800° C which is caused by a carbon coat on the metal surface and the slow diffusion rate of the oxide. Above 800° C, the oxygen becomes sufficiently mobile to keep moving into the metal, and the weight gains increased in a normal fashion. The metal should not be heated above 650° C (1202° F) for extended periods if execessive corrosion is to be avoided. Tensile properties are impaired above 800° C.

Sulphur Dioxide—The sulphur dioxide series followed the familiar pattern of increasing weight gains with increasing temperature. A well-defined critical temperature was established between 500° C (932° F) and 600° C. Samples heated to 600° C decomposed rapidly to oxide powder. Weight gains were negligible and tensile properties were unimpaired at 500° C.

Hydrogen—Excessive weight gains and a marked deterioration in tensile properties were caused by heating zirconium specimens in hydrogen above 500° C for 24 hours. Hydride formation embrittled the metal and reduced its ductility. Heating the hydrided specimens at 700° C in a vacuum restored the ductility. Figs. 2 and 3 show typical metallographic structures of zirconium after hydrogen treatment.

Propane—Zirconium was heated in propane at temperatures from 500° to 1000° C. The weight gain curve showed a sharp dip at 900° C and then a continued rise to 1000° C. Weight gains up to 800° C were due to hydrogen absorption, with the drop between 800° C and 900° C caused by decomposition of the hydride. Above 900° C the increase in weight is a result of hydride and carbide formation. Heating to 900° C did not impair yield and ultimate strengths, although elongation was reduced at 800° C and above.

Steam — Steam produced a very high corrosion rate, being second only to sulphur dioxide among the atmospheres studied. The decline in both corrosion resistance and tensile properties indicated that the metal should not be heated above 600° C in steam. The extreme sensitivity to sulphur dioxide and water vapor singly indicates that a combination of the two might be especially corrosive. Any application involving the exposure of zirconium to combustion products should be carefully investigated for specific conditions.



SLIGHTLY UNIQUE: When M. W. Kellogg Co., Jersey City, N. J., began making 30-inch chrome-molybdenum corrugated piping, its major problem in fabrication was to preclude cracking. Eight pieces of the relatively large diameter pipe, or 90 feet, were shaped for the major part of an exhaust steam line from a topping turbine in a main power station of an Eastern utility. Using the unique device shown, and through carefully controlled incremental heating and subsequent compression on this special machine, the corrugations were made. The corrugated piping made has five times the flexibility of plain piping

Heating Rods at High Speed

ENDS of steel oil well sucker rods measuring ⅝ to 1 inch in diameter are being heated at high speed for end-upsetting in four heating furnaces built by Surface Combustion Corp., Toledo, O., for a manufacturer of oil-field equipment.

Operating on natural gas and having a designed capacity of 180 1-inch diameter bars each per hour, the furnaces are processing seven bars at any given time. To meet production line requirements, units are designed with a maximum width of 21 inches. Heating zone is 15 inches wide and heat input is 1,210,000 btu per hour.

Knitted Wire

(*Concluded from Page* 66)

crimping rollers, tension being applied by first passing the wire through a pair of rubber rollers. The machine has adjustments for crimping to various depths to meet the specifications of filter elements as to density or rarity. It is in connection with the crimping operation that the knitted material is sized or produced to a specified width. This is a matter of pulling the wire over a mandrel of proper size and controlling the tension. Widths produced range from 1½ to 7 inches. The material is re-rolled as it emerges from the crimping rollers, as shown in the illustration.

Filter elements are made at a fast rate by winding up on a power-driven spool the crimped knitted material feeding from two rolls, the layers resting on each other at cross crimp. Core diameter is determined by the diameter of the spool; outside diameter is set by diameter of the spool ends, these ends being sheet steel disks of varying sizes which serve as templates. When the roll reaches correct outside diameter, material from the two supply rolls is cut off by scissors and the cut ends are kept from unrolling by insertion of large-size bar-heade household pins. The finished filter element, two of which are shown in Fig. 2, is removed from the spool ready for shipment to filter manufacturers and winding of another element is started.

Automobile "Ice Carpets" — The company's newest products are automobile ice carpets or traction mats. The idea for this came quite by accident. Stuck on the ice one day, Mr. Wartell placed under the rear wheels of his car pieces of knitted wire fabric he happened to have with him. He gained traction immediately and positively. On the strength of this experience, experimentation was undertaken to develop traction mats as a merchandisable item.

The product resulting is an inexpensive pair of carpets or mats, shown in Fig. 2. These consist of lengths of 5½-inch wide galvanized knitted round steel wire folded in 4 plies to 27-inch length and wire stitched at the ends to hold them to shape. The carpets, because of their springiness, deform practically not at all and have long life. They roll into a small bundle for storage in the car trunk.

Titanium Research Detailed

A TITANIUM alloy described as having the strength of high-strength steel with only half its weight is the subject of a research report prepared by P. R. Mallory Co., Indianapolis, Ind., for the Bureau of Aeronautics of the Navy. Containing 5 per cent chromium and 3 per cent aluminum, the alloy described is among the tabulated results given in the report. Also included are the effects of carbon, copper, manganese, silicon, alone and in combination as constituents in titanium alloys.

Aluminum, chromium and carbon are described as forming strong, ductile, high electrical resistance alloys with titanium. Alloys of either chromium and aluminum alone have little or no ductility, it is said, but show improved hardness at elevated temperatures. The report, PB 100,000, "The Manufacture of Titanium Alloys", is available in either microfilm or photostat form from the Library of Congress, Washington 25, D. C.

Strip Mill Is Modernized

INSTALLATION of two four-high mills represents the first step in the complete modernization of the strip mill of Riverside Metal Co., Riverside, N. J. Other new heat-treating, rolling and material-handling equipment is being placed in operation this summer to complete the program.

The largest of the two mills, a 6¾ x 23 x 18-inch four-high mill, built by United Engineering Co., is said to embody the latest automatic design from the standpoints of both manipulation and material handling. Coils of strip weighing up to 700 pounds may be handled by the mill which will roll them with the speed of 200 to 600 feet per minute. It is capable of reducing 0.050-inch thickness sheet down to 0.005-inch. The number of passes depends upon the work-hardening properties of the metal and the finish temper specified.

A roller conveyor system surrounds the mill so that as a coil is drawn through the mill, it may be sent back to the payoff reel over the conveyors or to the Drever furnace for process annealing.

Three Watch Dogs—Mill productivity is protected by three selectively toned howlers. One of which goes into action in the event of a rise in temperature at the motor-generator bearings. The second howler is actuated by a drop in temperature in the mill lubricant and the third sounds if there is any interruption in the coolant flow. A flying micrometer controls strip thickness instantly without stoppage of the mill.

Smaller of the four-high mills is a 2½ x 9 x 9-inch unit made by M & N Engineering Co. It has a

WIDE OPEN OPEN HEARTH: Being completely rebuilt and enlarged from 50 to 75-ton capacity is this No. 1 open hearth furnace at the South San Francisco plant of Bethlehem Pacific Coast Steel Corp. About 250 tons of structural steel, fabricated at the California plant, is being used in the framework. With all engineering and construction work being performed by plant personnel, the unit is expected to tap its first heat sometime this month. Also used in the construction were 130 cubic yards of concrete in the foundations and approximately 120,800 nine-inch equivalent clay, silica and chrome-magnesite brick

top speed of 700 fpm and rolls stock of a maximum thickness of 0.030-inch down to 0.003-inch. This range is said to cover a large volume of the company's production to meet the increasing uses for copper alloys in thinner gages.

Stud Welding Cuts Costs

IN AN EFFORT to cut manufacturing costs of control units built by Ajax Engineering Corp., Trenton, N. J., for its furnaces, use is being made of a Nelson stud welding gun to reduce manufacturing time 3 hours per unit. Under the old manufacturing methods, it was necessary to cut 22 pieces of ¾-inch pipe, ⅞-inch long, and remove burrs from each piece, used as shims between sheet metal and frame of control units. Pieces were then welded to sheet metal over holes where panel bolts are inserted.

After cleaning and grinding off these welds, it was necessary to lay out frames and center punch prior to tapping the 22 holes. A radial drill was used in the drilling and tapping of the ⅜-inch holes. Extra handling of the frame was required as the drill could not reach all holes to be drilled. In addition there were ten ¼-inch holes to be drilled and tapped on the top of the frame which had to be done by hand as the frames were too tall for the machine. Total time elapsed for the old method of manufacture was 4¾ hours per unit.

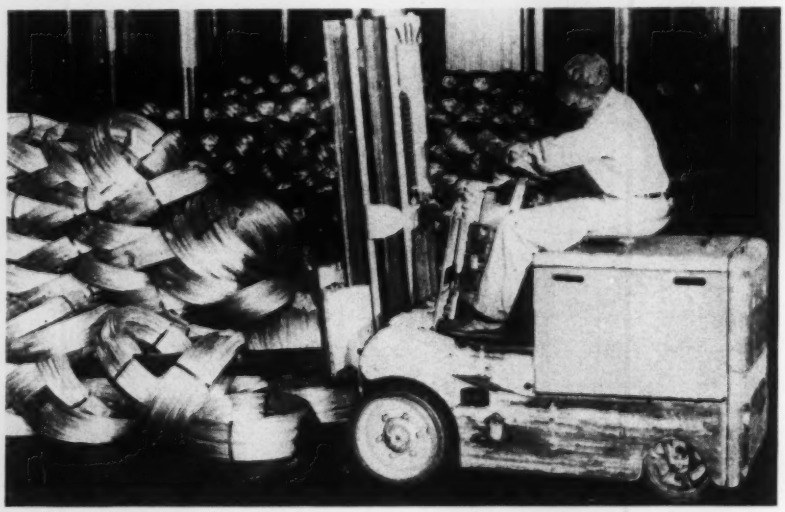
Using the stud welding gun, the total time elapsed was reduced to 1 hour 45 minutes per unit. After center punching the frames from a jig, 22 holes were made for ½-inch diameter by 1 inch long female studs for shims between sheet metal sides and frames. Center punching the top of the frame for ten ¼ x ½-inch male studs was performed and the Nelson gun connected to a Lincoln direct current welder.

According to Manual Tama, Ajax vice president, manufacturing requires the same amount of time per unit using the old method, regardless of how many units are made at one time. By using the stud welding system and making more than one unit at one time, an additional 30 minutes per unit is saved on each unit after the first one, he reported. This is because the welder and the stud gun have been set up for the first unit.

Makes Large Plastic Products

CAPABLE of pressing thermoplastic products weighing up to about 200 ounces is an injection molding machine, said to be the world's largest. Designed and built by Watson-Stillman Co., Roselle, N. J., the giant machine was installed in the A. L. Hyde plant in Grenlock, N. J.

Weighing 1,500,000,000 pounds, the machine has a nozzle pressure of 21,000 psi and is operated by a 60 hp motor. Platen size is 40 x 60 inches and daylight opening is 54 inches. The hopper holds 300 pounds of plastic raw materials and the clamping capacity is 1000 tons. Television and radio cabinets, washing machine agitators and tubes, refrigerators door linings, and outdoor signs may be made by the machine.



STACKED WIRE IN LACED PILES is one reason why A. Leschen & Sons Rope Co., St. Louis, Mo., is able to effect a 73 per cent savings in man-hours in handling coiled wire. Using a storage battery-powered industrial truck of 3000-pound capacity and fitted with a ram, coils of wire are carried in loads of as much as 2000 pounds at one time. Lacing of the piles permits this operation—moving of coils from warehouse to production—to be performed by the truck operator, where several men and a hand truck formerly performed

The Master of Metals

SHORTLY after one takes his seat to see the movie, "The Oxyacetylene Flame—Master of Metals," he is taken into the foundry and fabricating plant and shown how the oxy-acetylene processes are used to cut risers on castings, produce welded aluminum chair frames, and prepare H and I-beams for heavy steel construction.

Produced by International Acetylene Association and U. S. Bureau of Mines, the 20-minute picture has animated sequences showing how calcium carbide and acetylene are produced and why oxygen and acetylene are so effective in producing the "hottest flame on earth." Copies may be borrowed from the Graphic Services Section, Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburgh 13, Pa., or purchased from the association, 30 E. 42nd St., New York 17, N. Y.

New Supercharger Developed

OF SUCH size and design as to handle requirements of any gas or diesel engine from 1200 to 2500 hp are new superchargers for type LS and LSV engines, made by Cooper-Bessemer Corp., Mt. Vernon, O. Supercharging of engines is one of the most effective means of increasing engine power without increasing size or speed of the engine, the company reports. It was the company's decision to manufacture engine superchargers because it was unable to secure units of such large size in this country.

Electron Microscope Is Smaller

INSTRUMENT which has pushed the molecule out into the open is being moved into a much broader field of usefulness with the introduction of a greatly simplified electron microscope only 30 inches high by Radio Corporation of America, Camden, N. J. Reduced in size, complexity and cost, the new instrument employs permanent magnet lenses said to require no stabilization circuits and control. It will provide useful magnifications up to 50,000

diameters by photographic enlargement, with direct magnification in the unit ranging up to 6000 diameters.

Clutch Works on New Principle

INFINITE gear ratio changes on any kind of machinery on which a variable speed belt can be used are possible with an automatic variable speed clutch pulley recently introduced. Automatically controlled by engine speed, the clutch, developed by Driv-Way Lite Co., Denver, is centrifugally operated. In one of the two pulley halves, which operate along a central shaft connected to the engine, are several steel balls.

When the engine speed is increased, centrifugal force of the balls pushes against the pulley half, forcing both halves together, and thereby carrying the belt up from the pulley shaft and automatically changing the engine from a low to a high speed ratio. On the other end, the belt revolves on a similar pulley which operates by spring action rather than centrifugal force. Action of this pulley is determined by that of the main drive pulley.

Ball Change-Speed Change—When the pulley belt is resting high between the closed pulley halves of the drive pulley, it is low on the secondary pulley, and the engine is in high speed. When the opposite is true, the engine is in low speed. Varying performance, reduction or acceleration of starting and running speeds, may be easily obtained by inserting larger or smaller steel balls, aluminum rather than steel, or by changing the number of balls in two or four channels, depending upon the desired speed, acceleration or overdrive required of the engine.

Clutch is said to be safe in operation because the possibility of steel balls breaking away is eliminated. They become "inactive" in the upper curve of the channels; centrifugal force is exerted only on those balls in the vertical sections of the channels. When the engine speed is reduced and the pulley is in an idling position, the belt runs on an intermediate ball bearing set on a pulley shaft. With acceleration, the pulley belt is picked up by the pulley with no wear on the belt. Starting load is thus picked up without strain.

Offers Quality Control Course

OPEN to production and management personnel is an intensive course in quality control by statistical methods, to be offered in the Rocky Mountain region by the University of Colorado, Boulder. Running August 14-25, the course will be limited to 60 participants who may live in university housing. Charge for the 10-day course is $100, including instructions, texts and materials.

Production Up from 200 to 800

BEFORE installation of a double-spindle wet grinder, blades of a centrifugal abrasive blasting machine were ground individually at the approximate rate of 200 per hour. With the installation of this grinder by Charles H. Besly & Co., Beloit, Wis., American Wheelabrator & Equipment Corp., Mishawaka, Ind., now may grind these blades at both ends in a single operation at the rate of 800 per hour.

Both Fast and Automatic

INSTALLATION of a completely automatic production welding machine has enabled Borg Warner's Mechanics Universal Joint Division, Memphis, Tenn., to weld universal yokes with sound joints to each end of 2¾-inch diameter automobile shafts at high production speeds. Shafts are fed to the machine on a conveyor from the left and yokes arrive in another conveyor from the right. Both have a small chamfer to produce a V-joint.

Operator hydraulically clamps the yokes into shaft in a small jig and than places the assembly in one of four positions in turret head of the unit. Once the operation is started, it continues automatically, requiring only the placing of the work in the machine. The rotating turret puts the shaft in the welding position under the two welding heads. Once the operator places another shaft in the front position of the turret, the wire electrode starts to feed down, the flux valves open, the arc starts and the two welds are made simultaneously. A small piece of fiber attached to the head makes a dam to prevent spilling of flux off the shaft.

Welds are made in 11 seconds,

HIGH PRODUCTION HEATING: One of the independent companies in the automobile field, Packard Motor Car Co., Detroit, is keeping one of its operations competitive cost-wise through the use of an induction heating machine for localized hardening of four areas on synchromesh transmission spline shafts. At the rate of 90 per hour, shafts are fast traversed downward through the heating coil to the first area to be heated. Movement is slowed as coil is energized; after heating and quenching, it fast traverses to the next area. Steel is SAE 1141, hardened to Rockwell C58 on the downward travel, except on the overdrive spline, drawn back to C40 by induction heat on the upward stroke. Temperature of quenching water is controlled. Soluble oil may be mixed with water to slow the quench on certain steels.

Winning Editorial Awards

*3 AWARDS IN 1950 These awards for Editorial Excelle

were presented to STEEL at recent N.I.A.A. Conference

AWARD FOR

Outstanding Single Article

was earned by STEEL's timely *"Guide for Metalworking Executives on INSURANCE AND PENSIONS".*

AWARD FOR

Outstanding Series of Articles

was received by STEEL for the informative *"Fundamentals of STEELMAKING"* series.

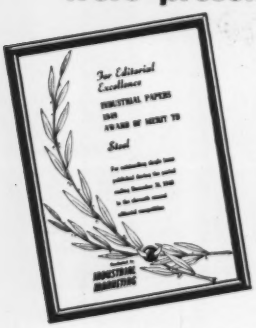
AWARD FOR

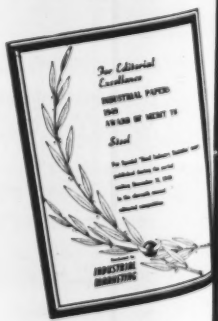
Outstanding Original Rese

was presented for STEEL's *"PRICE & MARKET GUI* the most complete weekly in the industry.

*4 AWARDS IN 1949 These awards for Editorial Excelle

were presented to STEEL at N.I.A.A. Conference last year





Awarded For *Outstanding Single Issue . . . Outstanding Series of Articles . . . Outstanding Original Research . . .* and *Special Steel Industry Statistics*

...is most gratifying...

but we value your opinion of STEEL even more

It's mighty inspiring to add these three Industrial Marketing awards to the four we won last year. STEEL's record in all of these highly competitive contests so far is unsurpassed by any other industrial magazine.

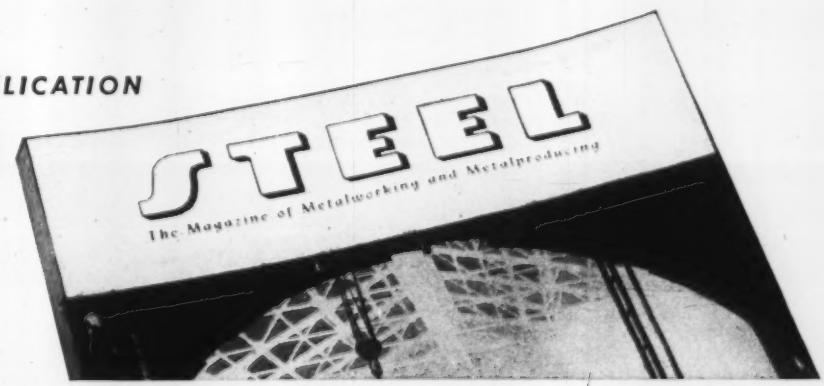
Of course we're pleased about that. But we never forget that the real measure of our editorial job is the good opinion of our readers. *Your opinion* of STEEL, based on the continuing benefit you derive from reading it each week, is our first criterion for editorial excellence.

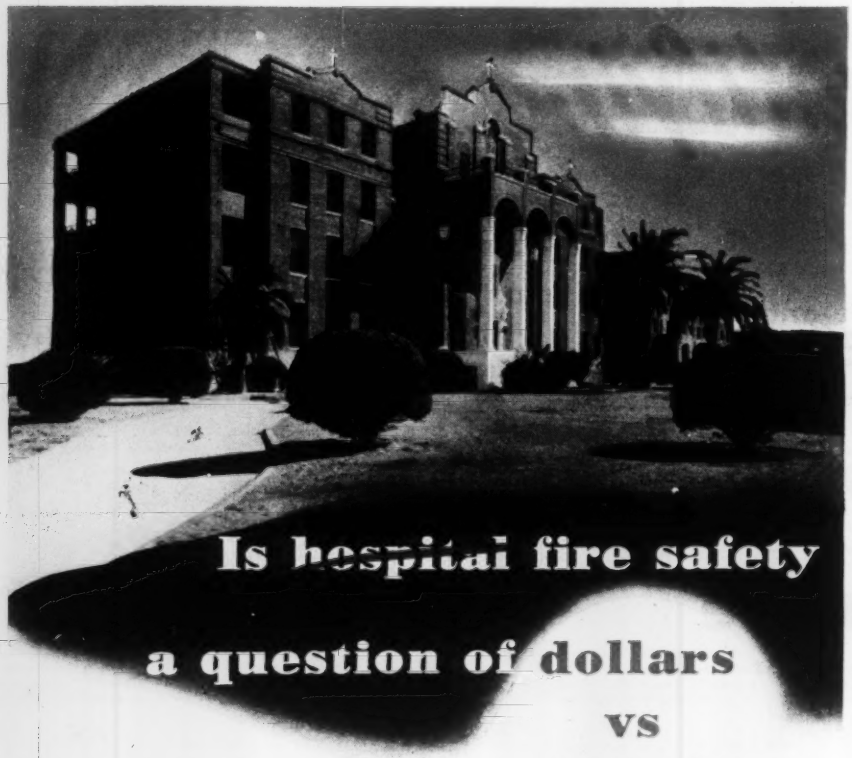
That is why our first responsibility will always be to bring you on-the-spot news, authoritative market reports and informative articles that will help you, week after week.

STEEL • THE PENTON PUBLISHING COMPANY • CLEVELAND 13, OHIO

A PENTON PUBLICATION

CCA





Is hospital fire safety a question of dollars vs lives?

Hotel Dieu Hospital—Beaumont, Texas
Fire Safe with "Automatic" Sprinklers

If fire protection measures are warranted in commercial and industrial structures where dollars are at stake, how much more necessary is every possible safeguard in buildings where helpless lives are constantly in jeopardy?

No building with flammable contents, regardless of construction, is *fireproof.* Only through the installation of "Automatic" Sprinklers can a structure be made *fire safe.* "Automatic" Sprinkler's record of better than 99% fire extinguishing effectiveness is all conclusive.

You and every other executive with an appreciation of good business logic must not overlook the importance of absolute fire safety, for you can *save lives . . . save property and save money with "Automatic" Sprinklers.*

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

"Automatic" Sprinkler
FIRST IN FIRE PROTECTION
DEVELOPMENT . ENGINEERING . MANUFACTURE . INSTALLATION
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

using 3/32-inch electrode wire, 25 amp and 26 v, with Lincolnweld units, made by Lincoln Electric Co., Cleveland. When the hidden arc welding is completed, flux valves close automatically, arc and wire feed stop and the turret revolves positioning another shaft for welding and discharging a completed assembly at the rear of the machine, made by Cecil C. Peck Co. of Cleveland.

Galvanized Ware Standard

RECOMMENDED commercial standard for galvanized ware fabricated from pregalvanized steel sheets for standard grade items only, is being submitted to producers, distributors, users and others interested for acceptance or comments, according to Commodities Standards Division, National Bureau of Standards, Washington, D. C. Specifications for the recommended standard grade include requirements for quality of base material, workmanship, and important features of construction.

CALENDAR OF MEETINGS

† *Denotes first listing in this column*

July 28, Malleable Founders' Society: Western sectional meeting. Drake Hotel, Chicago. Society headquarters are in the Union Commerce Bldg., Cleveland.

Aug. 7-19, First U. S.-International Trade Fair: Coliseum, International Amphitheater and Navy Pier, Chicago. Fair headquarters are in Congress Hotel, Chicago.

Aug. 14-16, Society of Automotive Engineers: West coast meeting, Biltmore Hotel, Los Angeles. Society headquarters: 29 W. 39th St., New York 18.

Aug. 16-18, Third Western Packaging and Materials Handling Exposition: Civic Auditorium, San Francisco. Additional information from Clapp & Poliak Inc., 341 Madison Ave., New York 17.

Sept. 5-9, American Chemical Society: National Chemical Exposition, Chicago Coliseum. Sponsored by Chicago Section, ACS, 86 E. Randolph St., Chicago 1.

Sept. 11, Society of Automotive Engineers: Tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

Sept. 11, Society of Automotive Engineers: Aeronautical meeting and aircraft engineering display, in Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Sept. 13-15, Porcelain Enamel Institute: Twelfth Annual Forum, University of Illinois, Urbana, Ill. Institute is located at 1010 Vermont Ave., N. W., Washington 5, D. C.

Sept. 13-16, National Association of Foremen: 27th annual convention, Statler Hotel, Buffalo, N. Y. Association headquarters: 321 W. First St., Dayton 2, O.

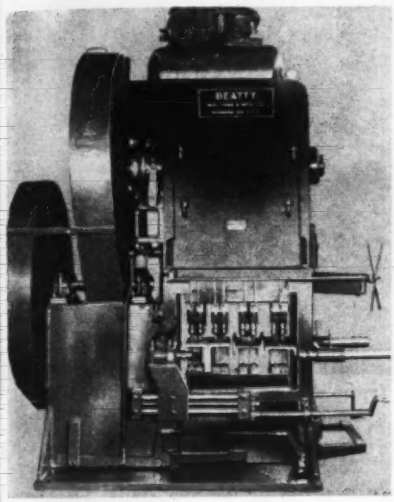
†**Sept. 18-22, Instrument Society of America:** Instrument conference and exhibit, Memorial Auditorium, Buffalo, N. Y. Society headquarters are at 921 Ridge Ave., Pittsburgh 12.

†**Sept. 19-21, American Society of Mechanical Engineers:** Fall meeting, Hotel Sheraton, Worcester, Mass. Society headquarters at 29 W. 39th St., New York 18.

New Products and Equipment

Punches Plates or Webs

Guillotine beam and shape punch introduced by Beatty Machine & Mfg. Co., Hammond, Ind., is designed to punch plates or webs of beams, channels and angles. It can also be furnished for special overhang die blocks for punching flanges of small beams and channels. Air clamps op-



erated against adjustable fixed stops and gag operating levers permit operation of the machine from the right side.

Punch tools are gagged for selective punching. Other features include adjustable strippers, jaw clutch with auto stop at top of stroke, antifriction type flywheel shaft bearings. Capacity is 200 tons or four 15/16-inch diameter holes through ¾-inch plate. Stroke is 2½ inches and distance between housings is 32 inches. Die space is 26 inches.

Check No. 1 on Reply Card for more Details

Conveyor Handles Forgings

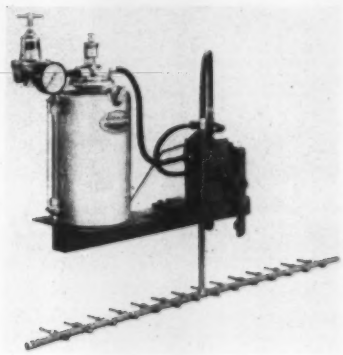
Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich., is introducing the forge Press-Veyor, a portable power belt conveyor for handling of forgings between operations. Equipped with a cleated wire-mesh belt, it will convey either hot or cold forgings weighing up to 25 pounds. Unit is available in 8, 12 or 16-inch belt widths and 4, 6 or 8-foot lengths. The 12-gage welded steel box channel bed will stand up under heavy continuous loads. Steel cleats are bolted to the belt.

Conveyor may be rolled to any desired location on two wheels mounted on an arc-welded steel tube base. A mechanical flapper gate at the receiving end prevents forgings from sliding back on the belt before the cleats take hold. Drive chain and sprockets are totally enclosed.

Check No. 2 on Reply Card for more Details

Lubricator for Trolley Wheel

An automatic conveyor lubricator, designed by J. N. Fauver Co. Inc., 49 W. Hancock Ave., Detroit 1, Mich., has a manifold with 14 outlets, 2⅝-inches apart, for lubricating chain-link-pins which are closely spaced. Trolley wheels are also lubricated by nozzles attached to the tripping mechanism and directed straight downward. Oil is directed at the



point where the wheels rotate against the hub at the end of the wheel pin bearings. Oil reservoir consists of a 2-gallon container, equipped with air regulator and pressure gages.

Check No. 3 on Reply Card for more Details

Lathes Turn Mill Rolls

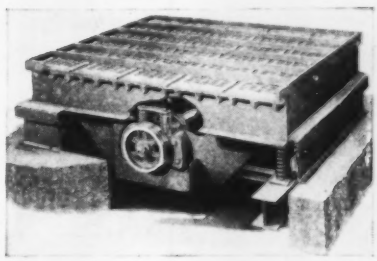
Monarch Machine Tool Co., Sidney, O., is producing two template-controlled engine lathes for the contour turning of steel mill rolls up to 20 and 15 inches in diameter, respectively. Identified as models NN and N, machines were designed to utilize carbide cutting tools. Economies are effected through reduced machining time, use of standard carbide turning tools with regular tool grinds, template control which eliminates matching rolls in pairs and using same template for both rough and finish passes.

Rolls are turned on centers, permitting necks to be handled during the same set-up. Distance between centers on the model NN 20-inch machine is 132 inches, on model N, 96 inches. This machine will handle occasional deep passes satisfactorily. Both machines have 16 speeds and Keller electrical contouring controls.

Check No. 4 on Reply Card for more Details

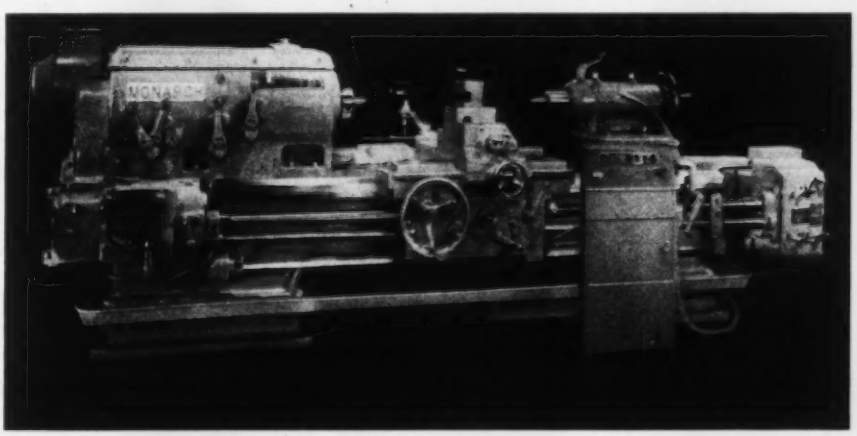
Foundry Shakeouts Are Faster

Cleaner and faster separation from sand and castings from flask and molds is possible with the line of heavy duty CA foundry shakeouts, developed by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill. They are available in standardized sizes ranging from an 8000 to 30,000 pound load capacity. Their use permits



continuous straightline operation for greater output, centralized dust control, reduction of sand lumps and temperatures for quicker recovery of sand, elimination of flask damage and simplification of reclamation of reinforcing rods, gaggers and sprues.

Vibrating deck is accessible from all four sides. Ready accessibility to operating parts makes inspection,



LEVINSON SERVICE at work

Blast Rocks Island Area

The dust collector on a Neville Island by-product gas furnace blew up with a ...attering roar shortly after ...n today.

EXPLOSION!

Steel Needed FAST

...ld ...area. The explosion occurred in a ...o furnace unit in an open area of the Pittsburgh Coke and Chemical Co.

Tuesday MAY 23

Call for Levinson Service

Wednesday MAY 24

37,000 lbs. Angles on the Job

And that meant double-quick service. These angles had to be unloaded at our plant, cut to size, punched and shipped, all in twenty-four hours! But that's not all . . . the following day a 40-ft channel had to be delivered, as well as 24,5000 lbs of ½" plate.

We don't say Levinson can do the impossible, but you'll find our organization tuned to step in when an emergency strikes. We try to give performance that keeps ahead of what we promise!

LSS-5

Levinson STEEL SALES CO.

20TH AND WHARTON STS., S. S.

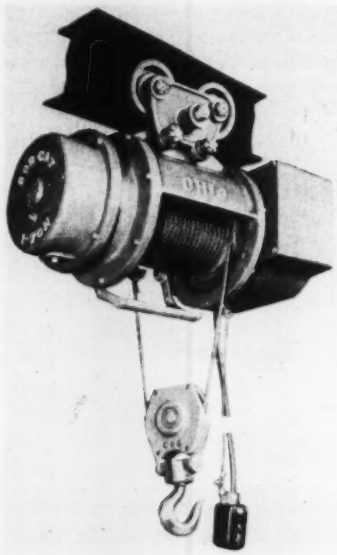
PITTSBURGH, PA.

lubrication and servicing easy. Decks on nondischarging types are set horizontal. On discharging types, they are sloped so that castings move to discharge end by combined action of gravity and vibratory motion.

Check No. 5 on Reply Card for more Details

Smaller Cable Hoists

With motor totally enclosed within the cable drum, over-all dimensions and weight are reduced in the Bob-Cat hoists of ½ to 5 tons lifting capacity, announced by Ohio Electric Mfg. Co., 5900 Maurice Ave., Cleveland 4, O. Motor is protected against weather, moisture, dust and corrosive



atmospheres. Load sustaining parts are made from steel forgings and castings having a safety factor of over 6 to 1.

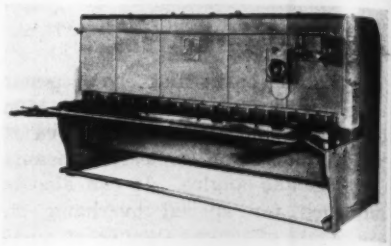
High torque motor and gears run in ball bearings. Gear reduction is through a double internal gear train that incorporates two Weston-type load brakes. Load hook oscillates and swivels on roller bearings and is suspended on a 5/16-inch preformed plow steel cable. Hoist is furnished for various voltages and has either pendant rope control or pushbutton control in pendant cable.

Check No. 6 on Reply Card for more Details

Won't Cut If Overloaded

Sheet metal squaring and slitting shear made by Johnson Machine & Press Corp., Elkhart, Ind., refuses to cut if overloaded. It uses hydraulic power to avoid overload. When shearing, the knife pauses the instant it engages with the stock, then eases its way through at a constant calibrated speed.

Completely self-contained with all working parts enclosed, the Hydra-Shear requires only a 6-inch level, concrete floor. Shear is available in 12 sizes ranging from 10 gage to



5/16-inch shear. A deep throat gap permits cutting of materials longer than the shear.

Check No. 7 on Reply Card for more Details

Hones External Surfaces

No special machine or skill is required to produce accurate, highly finished surfaces on all types of cylindrical parts with an external hone, the Odee-Hone, made by Micromatic Hone Corp., 8100 Schoolcraft Ave., Detroit 4, Mich. Simple to operate, the tool requires no aligning, fixturing or wheel dressing. Parts from ½ to 2½ inches in diameter may be honed, regardless of length or material.

Tool may be used in any lathe, drill press or electric drill. Diametric

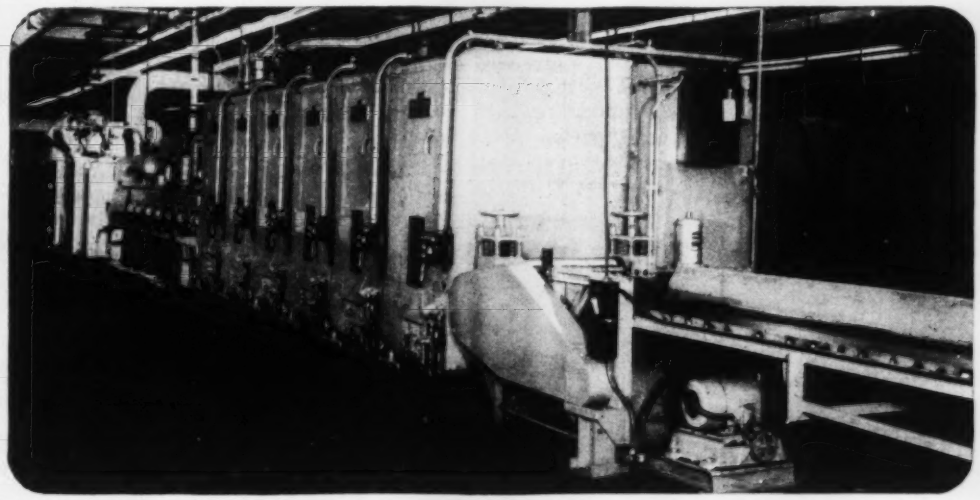
size is easily held to 0.0001-inch or less, by means of a calibrated "feed" dial. Out-of-roundness, waviness and chatter left by previous machining operation is removed as a geometrically accurate cylinder is generated.

Check No. 8 on Reply Card for more Details

Truck for Limited Space

Designed to be used in buildings with limited space and floor loading capacity are Spacemaster JFTT fork trucks, manufactured by Lewis-Shepard Products Inc., 261 Walnut St., Watertown 72, Mass. Standard capacities are 1000, 1500 and 2000 pounds for loads 32, 40 and 48 inches long. Standard lifting heights of fork elevation on telescopic models are 130, 106 and 82 inches, with corres-

COATED PRODUCTS COMMENTS



Wide Paper Belts put the bite on costs

Wide Paper Belts by CARBORUNDUM, used on fully automatic equipment, often bring about worthwhile cost reductions.

They have been widely adopted for grinding and polishing flat stock *prior* to forming. This procedure eliminates many costly finishing operations subsequent to forming—especially where angles and curved surfaces result. It replaces numerous manual and semi-automatic units employing set-up wheels, sander discs, and belts. Where precision dies are used, finish grinding often can be eliminated.

Multiple units of fully automatic high-production machines grind and finish hot-rolled and cold-rolled and stainless steel stock at extremely low cost. Abrasive belts are generally 12 to 50 inches wide but, for special installations, can be supplied up to 72 inches wide.

Because of the controlled process used in manufacturing these belts, further savings are possible. There are no "wild grains" to cause scratches. Perfectly formed splices prevent chatter. These two facts mean lower rejections.

We will be glad to furnish detailed information on Wide Paper Belts by CARBORUNDUM applicable to your operations. Write to Coated Products Division, The Carborundum Company, Niagara Falls, New York.

COATED ABRASIVES BY

CARBORUNDUM

TRADE MARK

Making ALL abrasive products . . .
to give you the proper ONE

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

ponding collapsed heights of 83, 71 and 59 inches, respectively.

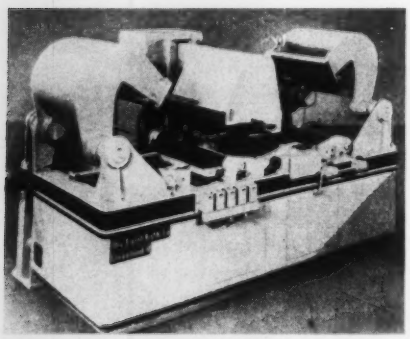
Compact design and proper weight distribution combined with rear wheel drive allow trucks to right angle stack in narrower aisles. Rear wheel drive permits truck to pivot about a

point halfway between two front wheels. Directionally operated controls for tilting of mast, lifting and lowering of load and travelling two speeds in each direction are foot operated.

Check No. 9 on Reply Card for more Details

Fast Forming Automatically

Series of 15 movements is normally automatic and operated by an electric control panel on the four-wing tangent bender, developed by Cyril Bath Co., Cleveland, O. Machine may be manually controlled if



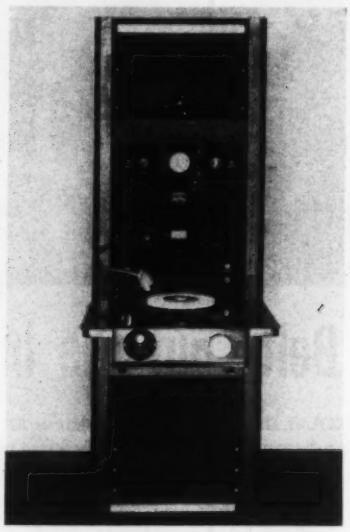
desired. It is designed so that an overhead arm can be bolted in place to provide welding devices, making possible forming of an entire case from a flat sheet without additional jigs or fixtures.

In operation, blanked and punched sheets are fed into a clear space in the center of the machine. Two hold-down pads keep the sheet in place while two end wings form up the ends of the blank at the proper radius and retract. Then two concealed wings move up and bend the front corners of the cabinet, then retreat. Following this, the center ram, carrying the forming die, is raised at the same time the punch collapses and the finished shell is unloaded.

Check No. 10 on Reply Card for more Details

Tests Abrasives Sonically

Saturn Electronics Co., Niagara Falls, N. Y., is producing a sonic comparator for the rapid production testing of abrasive wheels, sticks and tiles for grade, soundness and homogeneity. The unit measures the natural period of vibration of the body under test, as related to the natural period for a standard body known to have the desired physical



properties. Test requires from 10 to 15 seconds per article. Other applications include testing of different types of ceramic and metallic materials.

Check No. 11 on Reply Card for more Details

Oil Immersed Rectifier

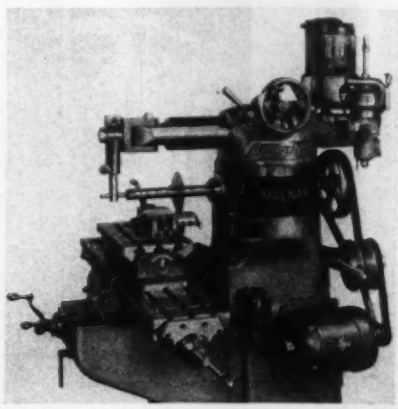
Designed for barrel and other types of electroplating is an oil-immersed selenium rectifier announced by General Electric Co., Schenectady 5, N. Y. Using hermetically sealed selenium stacks to withstand corrosive atmosphere of a plating room, the unit is available in two models: 6/12 volts, 1500/750 amps, 230/460 volts ac, 60 cycles, three-phase; and 9/18 volts, 1500/750 amps, 230/460 volts ac, 60 cycles, three-phase.

Rectifier consists of a transformer, fan and 12 stacks arranged in a steel casing. Each stack is sealed in an oil-filled can, and contains matched selenium cells connected in parallel through heavy internal bus bars to mechanically sealed terminals. Fan in the top of the unit blows air downward, passing first over the rectifiers and then over transformer. Taps are provided to compensate for line voltage variations.

Check No. 12 on Reply Card for more Details

Makes Miller Universal

Errors in resetting from vertical to horizontal operations may be eliminated on a Bridgeport vertical milling machine with the installation of a horizontal adapter unit made by



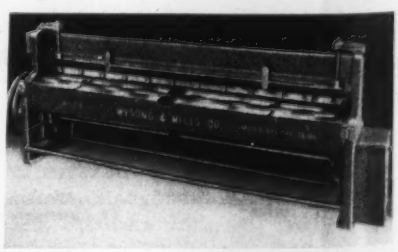
Malnar Machine & Tool Co. Inc., 19301 St. Clair Ave., Cleveland 10, O. The job is set up as usual and worked vertically with the Bridgeport head or may be worked horizontally with the added unit when the original is swung away.

Malnar unit is permanently centered on zero and the Bridgeport unit swings back immediately to the zero position. Horizontal spindle is strong enough for heavy end milling, fly-cutting, boring, drilling and other operations. Standard No. 10 Brown & Sharpe taper spindle is furnished, but others are available. Speed ratio is about 15 to 1.

Check No. 13 on Reply Card for more Details

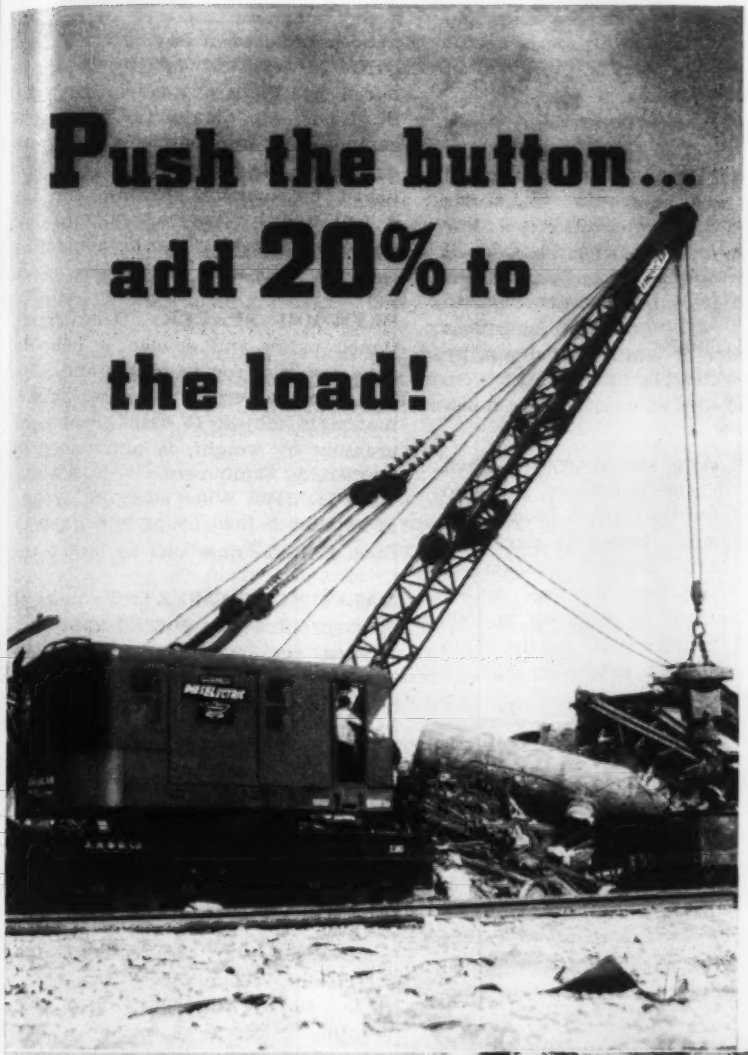
Line of Squaring Shears

Bed, end-frames, knife-bar, hold-down and top girder are one-piece high tensile castings in the line of 16-gage power squaring shears made



by Wysong & Miles Co., Greensboro, N. C. Made in cutting lengths of 42, 52, 72, 96 and 120 inches, the machine's bed is squared with the end-

Push the button... add 20% to the load!

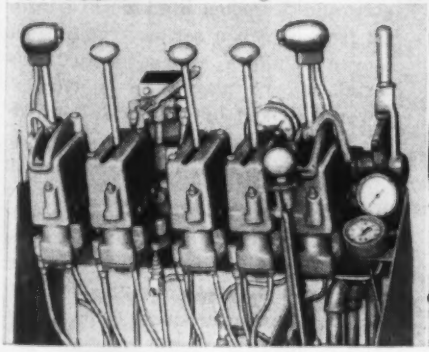


Side by side, two locomotive cranes loaded scrap at one of the big steel mills. Each made exactly the same number of passes with the same size magnet. Then the scrap was weighed . . . and the new American crane had moved 20% more material, by weight, than an older crane of the same rated capacity.

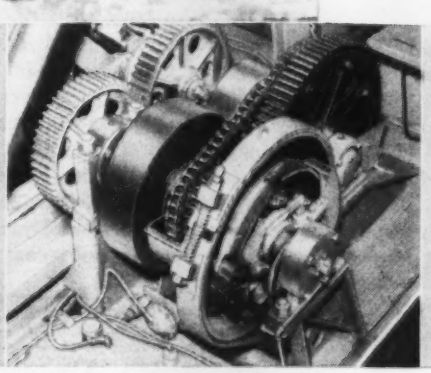
The difference? *Over-excitation* . . . an instantaneous extra shot of power to the magnet, which then lifts and holds with the same force as though magnet size were increased by 20%!

This great feature is yours on any American Locomotive Crane —all capacities. Your choice of power—including the great new DiesELectric. Want more facts? Mail the coupon for illustrated catalog.

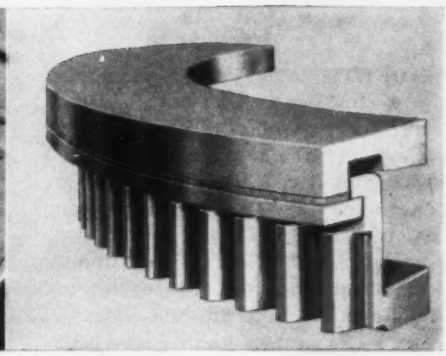
★ Diesel-Electric Locomotive Crane Patent No. 2083460. Touch Control Patent No. 2370856.



Push Button Controls...
On hoist and slewing levers, make easy, effortless magnet work. For over-excitation, just hold pick-up button an instant. To unload, push the other button. No need to ever take hands off main control levers.



Patented Boom Hoist
Maximum flexibility due to ability to raise or lower boom while hoisting, swinging or traveling. Boom can be raised from maximum to minimum radius in less than a minute. Photo shows unit with gear cover removed.



Interlocking Gib Ring
has done away with weak, unstable center king pin on all American cranes. Eliminates rocking, teetering, tipping. Distributes weight of machinery and load on a fully-enclosed 9-foot roller bearing.

American Hoist
& DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: SO. KEARNY, N.J.
Sales Offices:
NEW YORK • PITTSBURGH • CHICAGO

American Hoist & Derrick Company
St. Paul 1, Minnesota 5601

● Please send catalog on American Locomotive Crane.

Capacity _____ tons. Type of work: _____

Name _____

Company _____

Address _____

City _____ Zone ____ State _____

frames in all three directions for accurate cutting.

Clutch is of the sliding key type with spring loaded finger to prevent clicking. A nonrepeat unit is built in. Single stroke or continuous shearing is possible. The back gage is of the ball-bearing precision type and adjusts to 1/128-inch by turning a handwheel. Holddown action is automatic with pressure governed by large adjustable compression springs. Standard equipment includes multiple-edge blades, two front gage brackets with front gage, side and bevel gages, motor and controls.

Check No. 14 on Reply Card for more Details

Records Information on Tape

Streeter-Amet Co., 4101 N. Ravenswood Ave., Chicago 13, Ill., is offering an industrial counter providing a printed record of data on tape or card at any interval desired. It may be actuated by an electrical pulse or signal from a contact switch, photo tube and amplifier, metal detector, etc.

It may also be adapted to register change in electrical intensity, permitting use with arc welder, punch press or electrically-powered equipment which has a definite load change when operated. It may be adapted for use as a time-interval recorder, registering units as small as one 1/100th of a minute.

Check No. 15 on Reply Card for more Details

• • •

MAGNETIC AIR VALVE: Designed as a four-way, four-port, ⅜-inch valve for control of a double acting air cylinder, the new magnet operated valve announced by Square D Co., Milwaukee 12, Wis., uses the rotary action principle. It will operate continuously at 300 cycles per minute and at speeds up to 600 cycles per minute on intermittent duty.

Check No. 16 on Reply Card for more Details

SAFETY DEVICE: Known as the Sentry, the automatic earthquake or explosion operated electric switch, offered by McRae Valve Corp., Los Angeles 14, Calif., is designed to automatically shut off electric equipment in the event of a severe explosion or earth shock.

Check No. 17 on Reply Card for more Details

MEASURING INSTRUMENTS: Hunter Spring Co., Lansdale, Pa., has increased its line of force-measuring instruments to 12 models. In addition to the original model of 10 pound maximum capacity, it is available in capacities of 1, 2, 5, and 20 pounds; 16, 32, 80 and 160 ounces and 500, 1000 and 5000 grams. Unit is useful for checking forces and pressures in various mechanisms.

Check No. 18 on Reply Card for more Details

BOILER ALARM: To sound an alarm when the water level of the boiler reaches low, a Micro-Thermal low level boiler alarm has been developed by J. A. Campbell Co., Long Beach 7, Calif. Device can be attached to any boiler water column regardless of boiler size or length of column, by use of the flexible tube.

Check No. 19 on Reply Card for more Details

BINDS IN ONE OPERATION: Each operation of the handle of the load binder, offered by Canton Cast Products, Canton, O., takes up slack and tightens until desired tension is reached. Compound leverage action enables one man to exert up to 4500 pounds of "tension pull" on the chain without use of an extension pipe, or similar equipment.

Check No. 20 on Reply Card for more Details

REDESIGNED HEATERS: Airtherm Mfg. Co., St. Louis, Mo., has redesigned its line of direct fired heaters. Line consists of nine sizes ranging from 650,000 to 2,000,000 Btu. Oil or gas fired, heaters are available for heating only, or with dampers, filters, etc., for heating and ventilating.

Check No. 21 on Reply Card for more Details

SQUARE CLAMP: Available in three bore sizes, a new air clamp cylinder of completely square body design is introduced by Modernair Corp., Oakland 8, Calif. This design facilitates mounting so that units may be mounted closer together. Model No. 100 with plain end cap is recommended for mounting horizontally. Model No. 200 has end cap and rear mounting flange combined.

Check No. 22 on Reply Card for more Details

FOR HAZARDOUS LOCATIONS: Type E tachometer generator developed by Weston Electrical Instrument Corp., Newark 5, N. J., is designed for use where there may be explosive atmospheres. The alternating current generator, model 758, is of the rotating magnet type and is suitable for speeds up to 5000 rpm. Model 750, the direct current generator, has a wound armature with commutator and brushes. It can be operated at speeds up to 2000 rpm.

Check No. 23 on Reply Card for more Details

MAGNETIC PARTICLE CLUTCH: Magneclutch, a controllable coupling which utilizes the linking action of a dry magnetic mixture in a magnetic field between driving and driven parts to transmit torque, is introduced by Vickers Electric Division, St. Louis, Mo. Magnetic mixture is composed of iron particles and flake graphite. Magnetic field is established by current flowing through a coil and by varying current the degree of clutching can be controlled.

Check No. 24 on Reply Card for more Details

PLYWOOD SPACER: Heco partitioned pallet and spacer, a new device designed for handling and storing tires, batteries, wire and similar materials subject to damage or compression by weight, is announced by Hamerslag Equipment Co., San Francisco 11, Calif. When stacking, weight of articles is held by plywood spacer.

Check No. 25 on Reply Card for more Details

VALVE SEAT INSERT: To meet all size specifications for internal combustion engines, an improved valve seat insert is introduced by Martin Wells, Los Angeles 1, Calif. It is claimed that valve seat is made of an alloy that has been formulated so as to be free from checking and burning under extreme temperatures.

Check No. 26 on Reply Card for more Details

PRESERVES SAMPLES: Known as Dri-Jar, a new apparatus for drying, storing and filing samples in industrial laboratories, is announced by Bethlehem Apparatus Co., Hellertown, Pa. It consists of a wide-mouthed glass jar 3 inches in diameter and 7 inches high with a screw lid from which a series of four metal storage shelves are suspended. Material can be placed on shelves uncovered, boxed or otherwise separated, tabulated and marked.

Check No. 27 on Reply Card for more Details

PLASTIC PIPE: Designated as Carlon EX, a new pipe that features higher burst pressure and increased resistance to suction collapse is offered by Carter Products Corp., Cleveland 5, O. This plastic pipe also features flexibility, light weight and absolute resistance to rot, rust and electrolytic corrosion. It is available in standard pipe sizes.

Check No. 28 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEEL inquiry is reaching new heights under impetus of protective demand with consumers seeking to build inventories before government distribution controls are applied. In many products, mills and distributors are deluged with requests for tonnage. Only a small part of this "scare" ordering can be accommodated, and then only in minor products. Producers have been screening major products orders carefully for months past and this caution, if anything, now is even more in evidence.

DEMAND—Current inquiry is especially pressing for the light, flat-rolled products. But pressure for plates, pipe, bars and shapes also is intense and getting stronger. For instance, requests for light-gage plates are greater than at any time since World War II, giving rise to speculation as to how soon some continuous sheet rolling capacity will be called upon to convert to light plate production. This is especially true with a large railroad car program shaping up.

SUPPLY— The mills are booked to capacity in the major products for months ahead. With heavy military ordering in prospect, consumers will be lucky to obtain all of the tonnage they now have under contract let alone place additional orders for civilian goods production over the remainder of the year. Military demands will accelerate over coming weeks and because of this prospective switch to munitions, steelmakers are going slowly in booking for fourth quarter shipment.

ALLOCATIONS— Some form of allocations or priorities is expected quickly for the steel industry. Munitions orders momentarily are slow developing but a rapid pickup is indicated. Some substantial shell orders have been placed, as have contracts for military trucks and some airplane work. All of these programs are getting the green light with respect to steel supply on a voluntary basis. However, substantial switch to munitions undoubtedly will bring stricter government controls. Steel executives expect an early call to Washington to help work out a program. For the present, voluntary allocations will prevail, later giving way to a setup patterned somewhat after that prevailing immediately after the war.

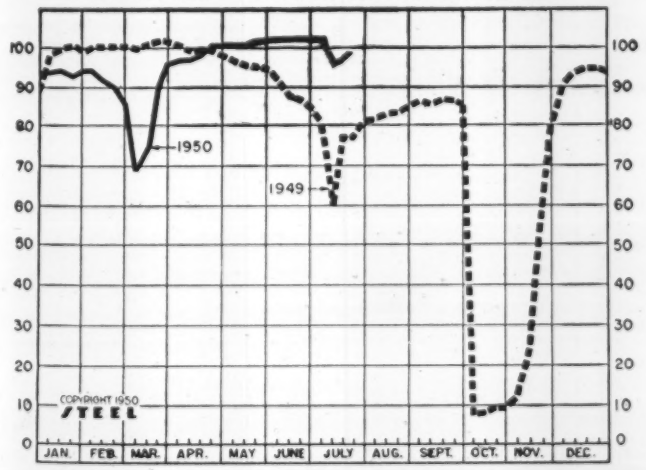
PRICES—Strong tone prevails in the market but finished steel prices are holding except for isolated increases. Indications are producers will make a determined effort to hold quotations in view of the threat of government control should prices get out of line. Last week additional producers of stainless steel effected increases similar to those by other makers over recent weeks and the Phoenix Iron & Steel Co. raised structural shapes $3 per ton. Otherwise no changes of note were reported though some talk was heard a rise of $3 per ton on pig iron is under consideration by one interest. Nonferrous prices are strong, Reynolds Metals Co. last week effecting increases of 1 cent per lb on aluminum pig and ingot.

COMPOSITES— Reflecting the stability in the market STEEL's weighted index of finished steel prices is unchanged at 156.69 and the arithmetical composite at $94.36. The price composite on steelmaking scrap is up 50 cents per ton to $37.25 with the trade marking time pending developments. Pig iron composities are steady.

PRODUCTION— Steelmaking operations rose 3 points last week to 99 per cent of capacity as additional mills completed vacation curtailments.

OUTLOOK— The steel industry, generally, is in excellent shape to take on whatever additional burdens may be imposed by the defense effort. It is tuned to higher rate of operation than even that during the peak of the last war. Plant and equipment have been expanded and modernized, ingot capacity now ranging around 100 million tons annually.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended July 22	Change	Same Week 1949	Same Week 1948
Pittsburgh	99.5	+ 1	74.5	90.5
Chicago	101	0*	87	88
Eastern Pa.	97	+ 0.5	80	90
Youngstown	107	0	70	100
Wheeling	101.5	— 1	85.5	89
Cleveland	100.5	+37.5*	88.5	99
Buffalo	104	0	93	99
Birmingham	100	0	100	100
New England	90	+30	10	83
Cincinnati	102	+ 4	91	96
St. Louis	83.5	— 1	87	78
Detroit	105	0	102	100
Western	95	0	77	..
Estimated national rate	99	+ 3	77	93

Based on weekly steelmaking capacity of 1,906,267 net tons for 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948.
*Change from revised rate.

News Summary—p. 27 Production-Engineering News—p. 57

Composite Market Averages

	July 20 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39) av.=100)	156.69	156.69	156.58	152.80	101.78
Index in cents per lb. ..	4.245	4.245	4.242	4.139	2.757
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.36	$94.36	$94.36	$91.82	$58.27
No. 2 Fdry. Pig Iron, GT	46.47	46.47	46.47	46.07	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT..	47.27	47.27	47.27	47.27	25.29
Steelmaking Scrap, GT..	37.25	36.75	39.25	19.17	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	July 20 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.65
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ..	3.60	3.60	3.60	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.60	3.60	3.60	3.50	2.25
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh...	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ...	3.25–50	3.25–50	3.25–50	3.25	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh ...	4.15–50	4.15–50	4.15–50	4.15–55	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	67.00	36.00
Wire rods, ½-⅜", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47.00	$47.00	$47.00	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	49.44	49.44	49.44	49.39	26.34
No. 2 Fdry, Pitts.	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.25	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	49.94	49.94	49.94	49.89	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.)del.Cin.	49.08	49.08	49.08	45.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn.	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

*Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts..	$41.00	$40.00	$45.00	$21.00	$20.00
No. 1 Heavy Melt. E. Pa..	33.00	33.00	35.25	17.00	18.75
No. 1 Heavy Melt. Chicago	37.75	37.50	37.50	19.50	18.75
No. 1 Heavy Melt. Valley.	40.75	40.50	42.50	18.50	20.00
No. 1 Heavy Melt. Cleve..	38.50	38.50	40.50	15.00	19.50
No. 1 Heavy Melt. Buffalo	36.75	36.75	39.75	19.25	19.25
Rails, Rerolling, Chicago..	48.50	48.50	47.50	27.75	22.25
No. 1 Cast, Chicago.....	44.50	44.50	44.50	29.50	20.00

Coke, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	15.50	15.50	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn.....	22.50	22.50	22.50	17.625	12.00
Zinc, E. St. Louis	15.00	15.00	15.00	9.50	8.25
Lead, St. Louis	11.80	11.80	11.80	13.80–85	6.35
Tin, New York	91.00	92.00	77.625	103.00	52.00
Aluminum, del.	17.50-18.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex. ..	24.50	24.50	24.50	38.50	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$48.00	$48.50	$49.00	$49.50
Newark, del.	50.63	51.13	51.63	52.13
Brooklyn, N.Y., del.	....	52.79	53.29	....
Birmingham District				
Alabama City, Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward, Ala. W15	41.88	42.38	....	....
Cincinnati, del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda, N.Y., W12	46.00	46.50	47.00	....
N. Tonawanda, N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester, N.Y., del.	48.63	49.18	49.63	....
Syracuse, N.Y., del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary, Ind. C3	46.00	....	46.50	....
Indiana Harbor, Ind. I-2	46.00	....	46.50	....
So. Chicago, Ill. W14, Y1	46.00	46.50	46.50	....
So. Chicago, Ill. C3	46.00	....	46.50	47.00
Milwaukee, del.	47.89	48.39	48.39	48.89
Muskegon, Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron, del. from Cleve.	48.39	48.89	48.89	49.39
Lorain, O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie, Pa. I-3	46.00	46.50	46.50	47.00
Everett, Mass. E1	....	50.50	51.00	....
Fontana, Calif. K1	52.00	52.50	....	....
Geneva, Utah G1	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.20	....	....
Portland, Oreg., del.	....	54.20	....	....
Los Angeles, San Francisco, del. ...	53.70	54.20	....	....
Granite City, Ill. M10	47.90	48.40	48.90	....
St. Louis, del. (incl. tax)	48.65	49.15	49.65	....
Ironton, Utah C11	46.00	46.50	....	....
Minnequa, Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
Neville Island, Pa. P6	46.00	46.50	46.50	47.00
Pitts. N.&S. sides, Ambridge, Aliquippa, del.	47.19	47.69	47.69	48.19
McKees Rocks, del.	46.95	47.45	47.45	47.95
Lawrenceville, Homestead, McKeesport, Monaca, del.	47.44	47.94	47.94	48.44
Verona, del.	47.90	48.40	48.40	48.90
Brackenridge, del.	48.13	48.63	48.63	49.13
Bessemer, Pa. C3	46.00	....	46.50	47.00
Clairton, Rankin, So. Duquesne, Pa. C3	46.00	....	....	....
McKeesport, Pa. N3	46.00	....	....	47.00
Sharpsville, Pa. S6	....	....	46.50	47.00
Steelton, Pa. B2	48.00	48.50	49.00	49.50
Steubenville, O. W10	46.00	....	....	....
Swedeland, Pa. A3	48.00	48.50	49.00	49.50
Philadelphia, del.	49.44	49.94	50.44	50.94
Toledo, O. I-3	46.00	46.50	46.50	47.00
Cincinnati, del.	51.01	51.51	....	....
Troy, N.Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard, O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.26	50.76	50.76	51.26

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.
Phosphorous: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson, O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

Niagara Falls, N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2.	82.00
Wenatchee, Wash., OH & Fdry., frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged from silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton, Pa. B2	54.00
Philadelphia delivered	57.00
Troy, N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL July 20, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R7 ..... $50.00
Munhall,Pa. C3 ..... 50.00

INGOTS, Alloy (NT)
Detroit R7 ..... $51.00
Houston,Tex. S5 ..... 59.00
Midland,Pa. C18 ..... 51.00
Munhall,Pa. C3 ..... 51.00
So.Duquesne,Pa. C3 .. 51.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)
Bessemer,Pa. C3 .... $53.00
Clairton,Pa. C3 ..... 53.00
Conshohocken,Pa. A3 .. 58.00
Ensley,Ala. T2 ..... 53.00
Fairfield,Ala. T2 ..... 53.00
Fontana,Cal. K1 ..... 72.00
Gary,Ind. C3 ..... 53.00
Johnstown,Pa. B2 ..... 53.00
Lackawanna,N.Y. B2 .. 53.00
Munhall, Pa. C3 ..... 53.00
So.Chicago,Ill. C3 .... 53.00
So.Duquesne,Pa. C3 .... 53.00

Carbon, Forging (NT)
Bessemer,Pa. C3 .... $63.00
Buffalo R2 ..... 63.00
Canton,O. R2 ..... 63.00
Clairton,Pa. C3 ..... 63.00
Cleveland R2 ..... 63.00
Conshohocken,Pa. A6 .. 65.00
Detroit R7 ..... 66.00
Ensley,Ala. T2 ..... 63.00
Fairfield,Ala. T2 ..... 63.00
Fontana,Calif. K1 .... 82.00
Gary,Ind. C3 ..... 63.00
Geneva,Utah G1 ..... 63.00
Houston,Tex. S5 ..... 71.00
Ind.Harbor,Ind. I-2 ... 63.00
Johnstown,Pa. B2 .... 63.00
Lackawanna,N.Y. B2.. 63.00
LosAngeles B3 ..... 82.00
Munhall,Pa. C3 ..... 63.00
Seattle B3 ..... 82.00
So.Chicago C3,R2,W14. 63.00
So.Duquesne,Pa. C3 .. 63.00
So.SanFrancisco B3 ... 82.00

Alloy (NT)
Bethlehem,Pa. B2 .... $66.00
Buffalo R2 ..... 66.00
Canton,O. R2, T7 .... 66.00
Conshohocken,Pa. A8.. 68.00
Detroit R7 ..... 66.00
Fontana,Calif. K1 .... 85.00
Gary,Ind. C3 ..... 66.00
Houston,Tex. S5 ..... 74.00
Ind.Harbor,Ind. Y1 .... 66.00
Johnstown,Pa. B2 .... 66.00
Lackawanna,N.Y. B2 .. 66.00
LosAngeles B3 ..... 86.00
Massillon,O. R2 ..... 66.00
Midland,Pa. C18 ..... 66.00
Munhall,Pa. C3 ..... 66.00
Sharon,Pa. S3 ..... 66.00
So.Chicago C3,R2,W14. 66.00
So.Duquesne,Pa. C3 .. 66.00
Warren,O. C17 ..... 66.00
Youngstown Y1 ..... 66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ..... $76.00
Cleveland R2 ..... 76.00
Gary,Ind. C3 ..... 76.00
Ind.Harbor,Ind. I-2 .. 76.00
Massillon,O. R2 ..... 76.00
So.Chicago,Ill. R2 .... 76.00
So.Duquesne,Pa. C3 .. 76.00

SKELP
Aliquippa,Pa. J5 ..... 3.25
Munhall,Pa. C3 ..... 3.15
Warren,O. R2 ..... 3.15
Youngstown C3, R2 .... 3.15

WIRE RODS
AlabamaCity,Ala. R2 .. 3.85
Buffalo W12 ..... 3.85
Cleveland A7 ..... 3.85
Donora,Pa. A7 ..... 3.85
Fairfield,Ala. T2 ..... 3.85
Houston,Tex. S5 ..... 4.25
Ind.Harbor,Ind. Y1 .... 3.85
Johnstown,Pa. B2 .... 3.85
Joliet,Ill. A7 ..... 3.85
LosAngeles B3 ..... 4.65
Minnequa,Colo. C10 .... 4.10
Monessen,Pa. P7 ..... 3.85
No.Tonawanda,N.Y. B11. 3.85
Pittsburg,Calif. C11 .... 4.50
Portsmouth,O. P12 .... 3.85
Roebling,N.J. R5 ..... 3.95
So.Chicago,Ill. R2 .... 3.85
SparrowsPoint,Md. B2 . 3.95
Sterling,Ill.(1) N15 .... 3.85
Struthers,O. Y1 ..... 3.85
Torrance,Calif. C11 .... 4.65
Worcester A7 ..... 4.15

BEARING PILES
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 .... 3.40

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 .. 3.40
Aliquippa,Pa. J5 ..... 3.40
Bessemer,Ala. T2 ..... 3.40
Bethlehem,Pa. B2 ..... 3.45
Clairton,Pa. C3 ..... 3.40
Fairfield,Ala T2 ..... 3.40
Fontana,Calif. K1 ..... 4.00
Gary,Ind. C3 ..... 3.40
Geneva,Utah G1 ..... 3.40
Houston, Tex. S5 ..... 3.80
Ind.Harbor,Ind. I-2 .... 3.40
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.00
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.00
Minnequa,Colo. C10 .... 3.75
Munhall,Pa. C3 ..... 3.40
Niles,Calif.(22) P1 .... 4.02
Phoenixville,Pa. P4 ..... 3.45
Portland,Oreg. O4 ..... 4.05
Seattle B3 ..... 4.05
So.Chicago,Ill. C3, W14. 3.40
So.SanFrancisco B3 .... 3.95
Torrance,Calif. C11 .... 4.00
Weirton,W.Va. W6 .... 3.40

Alloy Stand. Shapes
Clairton,Pa. C3 ..... 4.05
Fontana,Calif. K1 ..... 5.25
Munhall,Pa. C3 ..... 4.05
So.Chicago,Ill. C3 ..... 4.05

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ..... 5.15
Bessemer,Ala. T2 ..... 5.15
Bethlehem,Pa.(14) B2 .. 5.20
Clairton,Pa. C3 ..... 5.15
Fairfield,Ala. T2 ..... 5.15
Fontana,Calif. K1 ..... 5.75
Gary,Ind. C3 ..... 5.15
Geneva,Utah G1 ..... 5.10
Ind.Harbor,Ind. I-2, Y1. 5.15
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y.(14) B2 5.20
LosAngeles B3 ..... 5.75
Munhall,Pa. C3 ..... 5.15
So.Chicago,Ill. C3 ..... 5.15
So.SanFrancisco B3 .... 5.70
Struthers,O. Y1 ..... 5.15

Wide Flange
Bethlehem,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 .... 3.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 .. 5.20
Munhall,Pa. C3 ..... 5.10
So.Chicago,Ill. C3 ..... 5.10

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 .... 4.20
Lackawanna,N.Y. B2 .. 4.20
Munhall,Pa. C3 ..... 4.20
So.Chicago,Ill. C3 ..... 4.20
Weirton,W.Va. W6 .... 4.20

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.35
Bessemer,Ala. T2 ..... 5.35
Clairton,Pa. C3 ..... 5.35
Cleveland J5, R2 ..... 5.35
Conshohocken,Pa. A8 .. 5.35
Ecorse,Mich. G5 ..... 5.60
Fairfield,Ala. T2 ..... 5.35
Fontana,Calif. K1 ..... 5.95
Gary,Ind. C3 ..... 5.35
Geneva,Utah G1 ..... 5.35
Ind.Harbor,Ind. I-2, Y1. 5.35
Johnstown,Pa. B2 ..... 5.35
Munhall,Pa. C3 ..... 5.35
Pittsburgh J5 ..... 5.35
Sharon,Pa. S3 ..... 5.35
So.Chicago,Ill. C3 ..... 5.35
SparrowsPoint,Md. B2.. 5.35
Warren,O. R2 ..... 5.35
Youngstown Y1 ..... 5.35

PLATES, Open-Hearth Alloy
Claymont,Del. W16 .... 4.50
Coatesville,Pa. L7 ..... 4.50
Conshohocken,Pa. A3 .. 4.40
Fontana,Calif. K1 ..... 5.40
Gary,Ind. C3 ..... 4.40
Johnstown,Pa. B2 ..... 4.40
Munhall,Pa. C3 ..... 4.40
Sharon,Pa. S3 ..... 4.40
So.Chicago,Ill. C3 ..... 4.40
SparrowsPoint,Md. B2 .. 4.40

FLOOR PLATES
Cleveland J5 ..... 4.55
Conshohocken,Pa. A3 .. 4.55
Harrisburg,Pa. C5 ..... 4.55
Ind.Harbor,Ind. I-2 .... 4.55
Munhall,Pa. C3 ..... 4.55
So.Chicago,Ill. C3 ..... 4.55

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ... 3.75
Ashland,lcl(15) A10 ... 4.25
Cleveland,cl R2 ..... 4.10
Warren,O.cl R2 ..... 4.10

PLATES, Wrought Iron
Economy,Pa. B14 ..... 7.85

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 3.50
Aliquippa,Pa. J5 ..... 3.50
Ashland,Ky.(15) A10 .. 3.50
Bessemer,Ala. T2 ..... 3.50
Clairton,Pa. C3 ..... 3.50
Claymont,Del. W16 .... 3.60
Cleveland J5, R2 ..... 3.50
Coatesville,Pa. L7 ..... 3.60
Conshohocken,Pa. A3 .. 3.60
Ecorse,Mich. G5 ..... 3.75
Fairfield,Ala. T2 ..... 3.50
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.50
Geneva,Utah G1 ..... 3.50
Harrisburg,Pa. C5 ..... 3.85
Houston,Tex. S5 ..... 3.90
Ind.Harbor,Ind. I-2,Y1. 3.50
Johnstown,Pa. B2 ..... 3.50
Lackawanna,N.Y. B2 .. 3.50
Minnequa,Colo. C10 .... 4.30
Munhall,Pa. C3 ..... 3.50
Pittsburgh J5 ..... 3.50
Seattle B3 ..... 4.40
Sharon,Pa.S3 ..... 3.50
So.Chicago,Ill. C3, W14. 3.50
SparrowsPoint,Md. B2 .. 3.50
Steubenville,O. W10 .... 3.50
Warren,O. R2 ..... 3.50
Weirton,W.Va. W6 .... 3.50
Youngstown C3, R2, Y1. 3.50

PLATES (Universal Mill)
Fontana,Calif. K1 ..... 4.40

PLATES, Carbon A.R.
Fontana,Calif. K1 .... 5.25

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 .. 3.45
Aliquippa,Pa. J5 ..... 3.45
Alton,Ill.(1) L1 ..... 3.45
Atlanta,Ga. A11 ..... 3.60
Bessemer,Ala. T2 ..... 3.45
Buffalo R2 ..... 3.45
Canton,O. R2 ..... 3.45
Clairton,Pa. C3 ..... 3.45
Cleveland R2 ..... 3.45
Ecorse,Mich. G5 ..... 3.65
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 3.85
Niles,Calif. P1 ..... 4.17
N.Tonawanda,N.Y. B11. 3.45
Pittsburg,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
Seattle B3, N14 ..... 4.20
So.Chicago C3, R2, W14. 3.45
So.Duquesne,Pa. C3 .... 3.45
S.SanFran.,Cal. B3 .... 4.20
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Weirton,W.Va. W6 .... 3.45
Youngstown C3, R2 .... 3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 ..... 3.45
Atlanta A11 ..... 3.60
Johnstown,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Niles,Calif. P1 ..... 4.17
Pittsburgh(23) J5 .... 3.45
Portland,Oreg. O4 ..... 4.20
SanFrancisco S7 ..... 4.00
Weirton,W.Va. W6 .... 3.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ..... 3.65

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ..... 3.95
Buffalo R2 ..... 3.95
Canton,O. R2, T7 ..... 3.95
Clairton,Pa. C3 ..... 3.95
Ecorse,Mich. G5 ..... 4.25
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 3.95
Houston,Tex. S5 ..... 4.35
Ind.Harbor,Ind. I-2, Y1. 3.95
Johnstown,Pa. B2 ..... 3.95
KansasCity,Mo. S5 .... 4.55
Lackawanna,N.Y. B2 .. 3.95
LosAngeles B3 ..... 5.00
Massillon,O. R2 ..... 3.95
Midland,Pa. C18 ..... 3.95
So.Chicago C3, R2, W14. 3.95
So.Duquesne,Pa. C3 .... 3.95
Struthers,O. Y1 ..... 3.95
Warren,O. C17 ..... 3.95
Youngstown C3 ..... 3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 ..... 4.20
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 4.20
Youngstown C3 ..... 4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.20
Atlanta A11 ..... 5.35
Bessemer,Ala. T2 ..... 5.20
Bethlehem,Pa. B2 ..... 5.20
Clairton,Pa. C3 ..... 5.20
Cleveland R2 ..... 5.20
Ecorse,Mich. G5 ..... 5.40
Fairfield,Ala. T2 ..... 5.20
Fontana,Calif. K1 ..... 6.25
Gary,Ind. C3 ..... 5.20
Ind.Harbor,Ind. I-2, Y1. 5.20
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 .. 5.20
LosAngeles B3 ..... 5.90
Pittsburgh J5 ..... 5.20
So.Duquesne,Pa. C3 .... 5.20
So.SanFrancisco B3 .... 5.95
Struthers,O. Y1 ..... 5.20
Youngstown C3 ..... 5.20

BARS, Cold-Finished Carbon
Aliquippa,Pa. K5 ..... 4.15
Ambridge,Pa. W18 ..... 4.15
BeaverFalls,Pa. M12,R2. 4.15
Buffalo B5 ..... 4.15
Camden,N.J. P13 ..... 4.60
Carnegie,Pa. C12 ..... 4.15
Chicago W18 ..... 4.15
Cleveland A7, C20 .... 4.15
Detroit P17 ..... 4.30
Donora,Pa. A7 ..... 4.15
Ecorse,Mich. G5 ..... 4.35
Elyria,O. W8 ..... 4.15
FranklinPark,Ill. N5 .... 4.15
Gary,Ind. R2 ..... 4.15
Hammond,Ind. L2, M13. 4.15
Hartford,Conn. R2 ..... 4.55
Harvey,Ill. B5 ..... 4.15
LosAngeles R2 ..... 5.55
Mansfield,Mass. B5 .... 4.55
Massillon,O. R2, R8 .... 4.15
Midland,Pa. C18 ..... 4.15
Monaca,Pa. S17 ..... 4.15
Newark,N.J. W18 ..... 4.55
Plymouth,Mich. P5 .... 4.40
Pittsburgh J5 ..... 4.10
Putnam,Conn. W18 .... 4.55
Readville,Mass. C14 .... 4.55
St.Louis,Mo. M5 ..... 4.55
So.Chicago,Ill. W14 .... 4.15
SpringCity,Pa.(5) K3 .. 4.55
Struthers,O. Y1 ..... 4.15
Waukegan,Ill. A7 ..... 4.15
Youngstown F3, Y1 .... 4.15

BARS, Cold-Finished Alloy
Aliquippa,Pa. K5 ..... 4.90
Ambridge,Pa. W18 .... 4.90
BeaverFalls,Pa. M12 .... 4.90
Bethlehem,Pa. B2 ..... 4.90
Buffalo B5 ..... 4.90
Canton,O. R2, T7 ..... 4.90
Carnegie,Pa. C12 ..... 4.90
Chicago W18 ..... 4.90
Cleveland A7, C20 ..... 4.90
Detroit P17 ..... 5.05
Donora,Pa. A7 ..... 4.90
Elyria,O. W8 ..... 4.90
Gary,Ind. R2 ..... 4.90
Hammond,Ind. L2, M13. 4.90
Hartford,Conn. R2 ..... 5.20
Harvey,Ill. B5 ..... 4.90
Lackawanna,N.Y. B2 .. 4.90
Mansfield,Mass. B5 .... 5.20
Massillon,O. R2, R8 .... 4.90
Midland,Pa. C18 ..... 4.90
Monaca,Pa. S17 ..... 4.90
Newark,N.J. W18 ..... 5.20
Plymouth,Mich. P5 ..... 5.10
So.Chicago,Ill. R2, W14. 4.90
Struthers,O. Y1 ..... 4.90
Warren,O. C17 ..... 4.90
Waukegan,Ill. A7 ..... 4.90
Worcester,Mass. A7 .... 5.20
Youngstown F3, Y1 .... 4.90

RAIL STEEL BARS
ChicagoHts. (3) C2, I-2. 3.30
ChicagoHts. (4) C2, I-2. 3.45
Dallas,Tex.(4) S20 ..... 6.00
Franklin,Pa.(3, 4) F5 .. 3.45
FortWorth,Tex.(26) T4 .. 4.18
Huntngtn,W.Va.(3) W7 .. 3.45
Marion,O. (3) P11 ..... 3.45
Moline,Ill.(3) R2 ..... 3.40
South Avis,Pa.(2) J8 ..... 3.45
Williamsport(3) S19 ..... 3.70

BARS, Wrought Iron
Economy,Pa.(S.R.) B14. 8.60
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 .. 13.50
Dover(Wrgt.Iron) U1.. 12.25
McK.Rks.(S.R.) L5 .... 8.60
McK.Rks.(D.R.) L5 ... 11.25
McK.Rks.(Staybolt) L5. 12.75

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 .. 3.45
Alton,Ill.(6) L1 ..... 3.45
Atlanta A11 ..... 3.60
Buffalo R2 ..... 3.45
Cleveland R2 ..... 3.45
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 4.25
Niles,Calif. P1 ..... 4.17
Pittsburgh,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SandSprings,Okla. S5 .. 4.35
Seattle,Wash. B3, N14.. 4.20
SouthAvis,Pa. J8 ..... 3.45
So.Chicago,Ill. R2 ..... 3.45
So.Duquesne,Pa. C3 .... 3.45
So.SanFrancisco B3 .... 4.20
SparrowsPoint,Md. B2.. 3.45
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Youngstown C3, R2 .... 3.45

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 .. 4.50
Johnstown, ¼-1" B2 .... 4.35
LosAngeles B3 ..... 5.00
Marion,O. P11 ..... 4.40
Seattle B3, N14 ..... 5.10
SouthAvis,Pa. J8 ..... 4.35
So.SanFrancisco B3 .... 5.00
SparrowsPt., ¼-1" B2 .. 4.35
Williamsport,Pa. S19 .. 4.35

SHEET, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 .. 3.35
Ashland,Ky.(8) A10 ... 3.35
Butler,Pa. A10 ..... 3.35
Cleveland J5, R2 ..... 3.35
Conshohocken,Pa. A3 .. 3.45
Detroit M1 ..... 4.15
Ecorse,Mich.(8) G5 .... 3.55
Fairfield,Ala. T2 ..... 3.35
Fontana,Calif. K1 ..... 4.25
Gary,Ind. C3 ..... 3.35
Ind.Harbor,Ind. I-2, Y1. 3.35
Irvin,Pa. C3 ..... 3.35
Lackawanna,N.Y. B2 .. 3.35
Munhall,Pa. C3 ..... 3.35
Pittsburg,Calif. C11 .... 4.05
Pittsburgh J5 ..... 3.35
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. W14 .... 3.35
SparrowsPoint,Md. B2 .. 3.35
Steubenville,O. W10 .... 3.35
Torrance,Calif. C11 .... 4.05
Warren,O. R2 ..... 3.35
Weirton,W.Va. W6 .... 3.35
Youngstown C3, Y1 .... 3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 .. 4.50
Dover,O. R1 ..... 4.65
Ind.Harbor,Ind. I-2 .... 4.40
Mansfield,O. E6 ..... 4.15
Niles,O. N12 ..... 4.10
Torrance,Calif. C11 .... 5.15

SHEETS, H-R (14 ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ..... 5.05
Conshohocken,Pa. A3 .. 5.05
Ecorse,Mich. G5 ..... 5.25
Fairfield,Ala. T2 ..... 5.05
Fontana,Calif. K1 ..... 6.74
Gary,Ind. C3 ..... 5.05
Ind.Harbor,Ind. I-2, Y1. 5.05
Irvin,Pa. C3 ..... 5.05
Lackawanna(35) B2 ... 5.05
Pittsburgh J5 ..... 5.05
Sharon,Pa. S3 ..... 5.05
So.Chicago,Ill. C3 ..... 5.05
SparrowsPoint(36) B2 .. 5.05
Warren,O. R2 ..... 5.05
Weirton,W.Va. W6 .... 5.05
Youngstown, C3, Y1 .... 5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ..... 6.20
Ecorse,Mich. G5 ..... 6.40
Fontana,Calif. K1 ..... 7.06
Gary,Ind. C3 ..... 6.20
Ind.Harbor,Ind. I-2, Y1. 6.20
Irvin,Pa. C3 ..... 6.20
Lackawanna(37) B2 .... 6.20
Pittsburgh J5 ..... 6.20
SparrowsPoint(38) B2.. 6.20
Warren,O. R2 ..... 6.20
Weirton,W.Va. W6 .... 6.20
Youngstown Y1 ..... 6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky.(8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo,Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles,O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	**An'ld**	**Galv.**
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Armature**	**Electric**	**Motor**	**Dynamo**
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. 1-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Parkersburg F4 (cut lengths)	...	...	...	...	8.75
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Gage Base) Coils (Cut Lengths ½c lower) Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Parkersburg F4 (cut lengths)	9.30	....	....	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary, C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10.	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1.	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.35
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.25
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Harrison,N.J. C18	9.50
NewBritn,Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.40	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8: Cleve.orPitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80

Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	9.30	11.25	13.85

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	4.50
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.75
Detroit M1	4.95
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.30
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.50
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.15
NewBritain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	5.00
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.30
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.50
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
B1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. MS	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) NS	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. MS	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. MS	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-8ga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester, Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

ROPE WIRE	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.06	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality (6 to 8 gage)

	An'ld Stone	Galv. Stone
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. MS	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy.Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. MS	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint, Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	120

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. MS	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity, Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill. N15	116

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville MS	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Fairfield,Ala. T2	5.25
Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock To Dealers & Mfrs. (7) Col.

AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. MS	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance, Calif. C11	126
Worcester, Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. MS	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Pittsburgh R2	4.20
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	*9.10*
Pittsburgh O3, P14	9.10
Seattle B3	9.35

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	3.75

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron&Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P 17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan.Crucible Steel Co
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

(1) Chicago base
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ½" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base
(22) Del. San Fran. Bay area.
(23) Angles 1"x1" to 1¼"x1¼" only.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill shipments; to consumers, 4.93c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c. 0.035" and heavier.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.00	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	27.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ½" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ¼", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜"; W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10% Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302	....	....	....	19.75	21.50–24.00	75.00
304	22.50	26.50	....	20.75	22.50–25.5	77.00
305	....	....	....	....	....	79.00
309	28.00	32.00	....	....	....	....
310	34.00	38.00	....	....	....	105.00
316	27.00	31.00	....	26.90	28.00–33.5	....
317	32.00	36.00	....	....	....	....
318	31.00	35.00	....	....	....	....
321	24.00	28.00	....	23.00	25.00	90.00
347	25.00	29.00	....	24.00	26.00–31.5	94.00
405	18.75	24.75	....	....	....	....
410	18.25	24.25	....	....	....	....
430	18.25	24.25	....	....	....	....
Nickel	31.00	41.00	31.50 41.00	....	....	88.00
Inconel	39.00	51.00	....	....	....	140.00
Monel	32.00	42.00	26.50 33.50	....	....	83.00
Copper*	....	....	20.70† 25.65‡	....	....	....

* Deoxidized. † 17.20c for hot-rolled. ‡ 22.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville L7; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 27
- ⅝-in. & ⅝-in. 29
- ¾-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

H.P. & C.P. Reg. & Heavy Square:

	Reg.	Heavy
½-in. and smaller	25	
⅝-in. & ⅝-in.	23	
¾-in.-1½-in.	23	
1⅝ in. and larger	16	

H.P. Hex.:

	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in..	28	25
¾-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16

C.P. Hex.:

	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in..	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.	Lght.
½-in. and smaller	35	41	41
⅝-in. & ⅝-in.	30	36	36
¾-in.-1½ in..	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ¼-in. through ⅝-in. .. 50
- ¾-in. through 1 in. ... 43

Longer than 6 in.:
- ¼-in. through ⅝-in. .. 33
- ¾-in. through 1 in. .. 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 46
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger 24
N.F. thread, all diams. . 18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.25c
⅞-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....Net to $1 off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.50	30.00
303...	41.00	38.00	32.50
304...	41.00	36.50	31.50
309...	53.50	52.50	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.
Baltimore, bars wire and structurals A10.
Brackenridge, Pa., sheets A4.
Bridgeville, Pa., bars, wire, sheets & strip U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.
Carnegie, Pa., strip except Types 303, 501, 502 S18*.
Cleveland, strip A7.
Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.
Dunkirk,N.Y., bars, wire A4.
Duquesne, Pa., bars C3.
Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.
Gary, Ind., sheets except Type 416 C3.
Harrison, N. J., strip C18.
Harrison, N. J., Types 302, 304, 316 wire and strip D6.
Massillon, all products R2.
McKeesport, Pa., bars; sheets except Type 416 C3.
McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.
Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & Strip C18.
Munhall, Pa., bars C3.
Pittsburgh, sheets C18.
Reading, Pa., bars & strip C4.
So. Chicago, Ill., bars & structurals C3.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars U4.
Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.
Washington, Pa., bars, sheets & strip J3.
Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 58.00c, strip 60.00c W4*.
Watervliet, N. Y., structurals & bars A4.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4.
Youngstown, strip C8*.

* Quotes 1.50 cents lower.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00
Tuluol, one deg...18.25-25.75
Industrial xylol ..19.75-27.50
Per ton bulk, ovens
Sulphate of ammonia .$32-45
Cents per pound, ovens
Phenol, 40 (carlots, returnable drums) 13.50
Do., less than carlots..14.25
Do., tank cars 12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.
Imported, net ton, duty paid, metallurgical grade, $39-40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron:	
98+% Fe, carlots..	15.00
Swedish, c.i.f. New York, in bags ...7.40-8.50	
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe (minus 325 mesh)	48.50
Powder Flakes	44.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns..70.00-135.00	
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots..28.50-31.25	
Copper:	
Electrolytic	31.75
Reduced	31.50
Lead	18.50
Manganese:	
Minus 100-mesh 52.00-55.00	
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel unannealed ...	75.50
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ..	75.00
Tin	91.12
Zinc, 10-ton lots..20.50-28.00	
	Dollars
Tungsten:	
99%, minus 80 to 200 mesh, freight allowed. over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb..	3.00
98.8%, minus 65 mesh, freight allowed, 1000 lb and over..	2.90
less than 1000 lb ..	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb ..	2.75
82-88%, freight allowed, 2000 lb and over..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. .$14.00-14.50
Connellsvll.fdry. .15.00-16.00
New River, foundry...19.00
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens .$22.00
Everett, Mass., ovens
New England, del.‡ 23.40
Chicago, ovens 21.00
Chicago del. 22.45
Detroit, del. 24.91
Terre Haute, ovens ... 21.20
Milwaukee, ovens 21.75
Indianapolis, ovens 20.75
Chicago, del. 24.12
Cincinnati, del. 23.67
Detroit, del. 24.65
Ironton, O., ovens ... 20.40
Cincinnati, del. 22.71
Painesville, O., ovens 21.90
Buffalo, del. 24.02
Cleveland, del. 23.62
Erie, del. 22.04
Birmingham, ovens 19.15
Birmingham, del. ... 20.20
Philadelphia, ovens ... 21.25
Neville Island,Pa.,ovens 21.00
Swedeland, Pa., ovens..21.20
Portsmouth, O., ovens..20.15
Cincinnati, del. 22.71
Detroit, ovens 21.65
Detroit, del. 22.65
Buffalo del. 24.69
Flint, del. 24.09
Pontiac, del. 23.04
Saginaw, del. 24.40

Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three of more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	5.75	6.84	7.40	6.04	...	5.95	6.64	8.60	5.85	6.10	7.54
New York(c'try)	5.55	6.64	7.20	5.84	...	5.75	6.44	8.40	5.65	5.90	7.34
Boston (city) ..	5.95	6.75	7.37	5.90	...	5.80	6.39	8.70	5.95	6.28	7.48
Boston (c'try) .	5.75	6.55	7.17	5.70	...	5.60	6.19	8.50	5.75	6.08	7.28
Phila. (city) ..	6.60-6.70	6.75	7.10	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try)..	6.35-6.45	6.50	6.85	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.66	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.46	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.35	...	6.90	5.63	...	5.53	6.30	...	5.63	5.45	7.13
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10†††[5]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90†††[5]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.60-6.70	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86†††[5]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.30	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.10	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city)..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.05	5.30	...	5.30	5.85	9.75†††[5]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.85	5.10	...	5.10	5.65	9.55†††[5]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	6.94	5.44	...	5.44	6.09	9.89†††[5]	5.59	5.74	6.94
Milwau. (c'try)	5.29	6.09	7.14	5.24	...	5.24	5.89	9.69†††[5]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08†††[5]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88†††[5]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	7.80	6.15	8.55	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	7.60	5.95	8.35	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[2]	7.45[9]	8.25[3]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma .	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk: Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45; Martin, Millersville, Narlo and Bettsville, O., Billmeyer, Pa., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Wolframite, scheelites, net ton unit, duty paid	$21.50-$22.50

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb. molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 119)

Tin Prices Swing in Wide Arc

Market reacts with extreme sensitiveness on developments in the Korean War. Other major markets remain steady with many sellers allocating supplies

New York—Reflecting the Korean situation and contrasting with most other major metals, tin prices continue to fluctuate rapidly. After having soared to 96.50c on July 14, the market slumped to 89.50c on July 19 and rallied to 91.00c the following day.

The rapid fluctuations in the market here followed similar price movements in the Singapore market. Outbreak of fighting in Korea initially caused a stampede of buyers for tonnages on fears that the flow of supplies from the Far East was seriously threatened. A large portion of the heavy buying also reflected desire of buyers in all principal consuming countries to accumulate reserves of the metal in case government restrictions on supplies and price of the metal should be imposed. Part of the subsequent reaction is attributed to the fact that the British Ministry of Supply, among other sellers, offered substantial tonnages in an effort to keep prices within reasonable limits.

Lead Prices Hold—Buying flurry in lead has subsided. Volume is fair and most bookings are for August delivery. Domestic mines produced 37,780 short tons of recoverable lead in May against 35,612 tons in April, reports the Bureau of Mines.

Copper Supplies Tight—August allocations of copper are about completed, with demand continuing well in excess of supply. Prices are steady, holding at 22.50c, delivered Connecticut. June deliveries are estimated in excess of 159,000 tons, those to fabricators amounting to 126,074 tons with the remainder going into government stockpiles. Wildcat strike at the Cartaret, N. J., plant of U. S. Metals Refining Co., involving 1800 employees, was called off July 18 because of the Korean war. Federal Mediation Service will appoint an arbitrator to conduct hearings and render a decision.

White Bros. Smelting—Federated Metals Division, American Smelting & Refining Co. has acquired the business of White Bros. Smelting Corp., Philadelphia. The latter firm has been a producer of brass ingot, phosphor copper and a smelter of copper-bearing materials since 1869. The entire personnel of White Bros. is being retained and will continue to operate the plant.

Zinc Market Strong—With zinc supplies remaining tight, undertone of the market is strong. Prices held last week at 15.00c, St. Louis. The export market is holding at around 16.00c, f.a.s. Gulf ports. Domestic mines produced 51,576 tons of recoverable zinc in May against 49,113 tons in April.

Government Watches Closely—While the President stated in his recent address that he was not seeking price control authority, he nevertheless said he would do so if it appeared that prices would get out of hand. Steadiness of most primary metal prices in the face of the Korean emergency indicates he may not find it necessary to call for such authority in the early future.

The President asked for authority to establish allocations and priorities on essential materials, but what action may be taken is difficult to foretell. Meanwhile, sellers, especially of copper and zinc, are allocating supplies as equitable as possible.

Reynolds Aluminum Prices Rise

Louisville, Ky.—Reynolds Metals Co., this city, increased its price for aluminum pigs and ingots 1 cent a pound, effective July 19. The new Reynolds price for aluminum in pig form is 17.50c a pound; for ingots, 18.50c a pound. The advance is attributed to higher manufacturing labor and raw material costs.

Reynolds Metals also increased its price for aluminum cable and corrugated sheet aluminum by two cents a pound; wire, rods, bars and irrigation pipe, 1 cent a pound; and ordinary aluminum sheet by 1 to 2 cents a pound, depending upon the thickness and gage.

Alcoa Allocates Pig and Ingot

Pittsburgh—Aluminum Co. of America has begun allocating aluminum pig and ingots in order to assure adequate supplies to established customers. No new customers for pig and ingots will be accepted. Old customers will be supplied on the basis of what they have ordered in the past.

The move was undertaken, Alcoa said, in reply to a query in an effort to halt a definite trend toward "inventory buying" and sudden buying by concerns which heretofore had not purchased such material from the company.

Although the company's summer business has been excellent with demand continuing high, the installation of the allocation system was not a question of a shortage in aluminum generally, company officials said. The company recently has noted increased inquiries from concerns that previously had used scrap or secondary aluminum ingot. There were also evidences of some "scare stockpiling." The company uses a majority of its pig and ingot output for its own fabricated products which are in ample supply to meet its customers' needs.

Magnesium Ingot Rises 1 Cent

Midland, Mich.—Magnesium Division, Dow Chemical Co., this city, advanced the price of primary magnesium ingot 1 cent per pound to the basis of 22.50c a pound for commercially pure ingot in 10,000 lb lots and over. W. S. Loose, sales manager of the division, also reported that magnesium sticks and turnings are increased 1.50 cents a pound; magnesium alloy ingot, 1.50 cents a pound; extruded core magnesium anodes, 4 cents a pound. All price changes are effective as of July 19.

Output At Postwar High

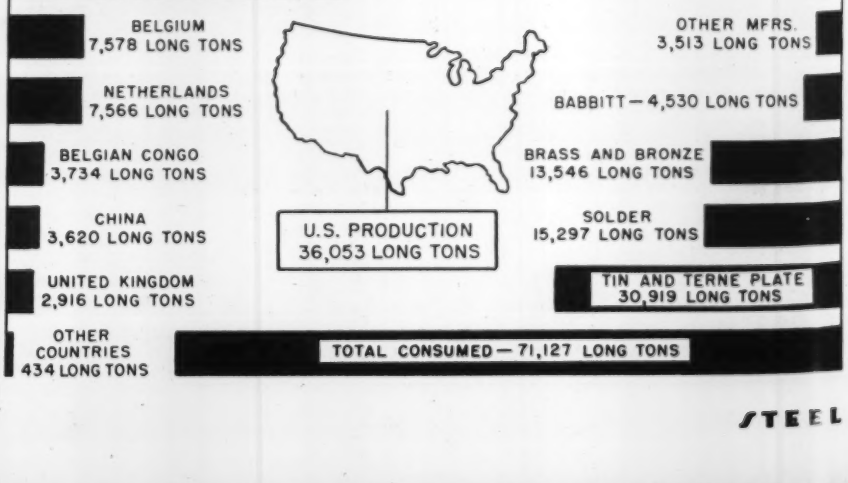
New York—Preliminary aluminum production increased to a new postwar high in May, reports Donald M. White, secretary, Aluminum Association, this city. May production of 123,858,511 pounds was well above the previous peak month, March, 1950, with 117,493,525 pounds. Production in April, a shorter month, was 116,048,542 pounds.

Shipments of aluminum sheet, plate and strip in May totaled 87,339,640 pounds compared with 90,816,431 pounds in April.

U. S. Tin Imports Plus Output Exceed Consumption

. . . accumulation of emergency reserves moving forward

(chart based on 1949 statistics)


TOTAL IMPORTS—60,222 LONG TONS
MALAYA—34,374 LONG TONS
BELGIUM 7,578 LONG TONS
NETHERLANDS 7,566 LONG TONS
BELGIAN CONGO 3,734 LONG TONS
CHINA 3,620 LONG TONS
UNITED KINGDOM 2,916 LONG TONS
OTHER COUNTRIES 434 LONG TONS
U.S. PRODUCTION 36,053 LONG TONS
COLLAPSIBLE TUBES AND FOIL 934 LONG TONS
TINNING—2,388 LONG TONS
OTHER MFRS. 3,513 LONG TONS
BABBITT—4,530 LONG TONS
BRASS AND BRONZE 13,546 LONG TONS
SOLDER 15,297 LONG TONS
TIN AND TERNE PLATE 30,919 LONG TONS
TOTAL CONSUMED—71,127 LONG TONS

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50c, Conn. Valley; Lake 22.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 22.00c; 88-10-2 (No. 215) 29.00c; 80-10-10 (No. 305) 22.50c; No. 1 yellow (No. 405) 19.00c.

Zinc: Prime western 15.00c; brass special 15.25c; intermediate 15.50c, East St. Louis; high grade 16.10c, delivered.

Lead: Common 11.80c; chemical 11.90c; corroding 11.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50-18.50c, pigs 16.50-17.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 18.25-18.75c; No. 12 foundry alloy (No. 2 grade) 17.75-18.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.75c; grade 2, 18.00c; grade 3, 17.25c; grade 4, 16.75c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 22.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot and July 91.00c del.

Antimony: American 99-99.8% and over but not meeting specifications below 24.50c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 25.00c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese and Yukoslavian, 22.00c; English and Belgian, prompt, 23.00c, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $70-$73 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2.15 del.; special or patented shapes, $2.30.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $74-$77 per ounce.

Palladium: $24 per troy ounce.

Iridium: $160 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 22.50-cent copper.)

Sheet: Copper 37.43; yellow brass 34.19; commercial bronze, 95%, 37.38; 90%, 36.93; red brass, 85% 35.96; 80%, 35.52; best quality, 35.04; nickel silver, 18%, 48.39; phosphor-bronze, grade A, 5% 55.11.

Rods: Copper, hot-rolled 33.28; cold-drawn 34.53; yellow brass free cutting, 28.54; commercial bronze, 95% 37.07; 90% 36.62; red brass 85% 35.65; 80% 35.21.

Seamless Tubing: Copper 37.47; yellow brass 37.20; commercial bronze 90% 39.59; red brass 85% 38.87; 80% 38.43.

Wire: Yellow brass 34.48; commercial bronze, 95% 37.67; 90% 37.22; red brass, 85% 36.25; 80% 35.81; best quality brass 35.33.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67, l.c.l. 27.17, 100,000 lb lots 26.545; weatherproof, f.o.b. eastern mills, c.l. 28.10, l.c.l. 28.60, 100,000 lb lots 27.85; magnet, del., 15,000 lb or more 32.50, l.c.l. 33.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective July 19, Reynolds Metals Co. raised prices 1 to 2c a pound above listed quotations.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0 060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	—Hexagonal— R317-T4	—Hexagonal— 17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $17.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $17.00 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets, 20.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 20.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 19.00c; over 12-in., 20.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 75.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip, cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-59.00c; 25 to 99 lb. 45.00-49.00c; 100 lb to 5000 lb, 38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 51.40c, under 1000 lb 49.40c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 28.00c; over 200 lb, 27.00c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c; 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl, 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 44.6c, 10 or more drums 42.6c, f.o.b. Niagara Falls, N. Y.; 45.85c and 43.85c, respectively, del. Cleveland or Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Heavy Clean	Ends Rod	Turnings Clean
Copper	19.50	19.50	18.75
Yellow Brass	16.75	16.50	15.50
Commercial Bronze			
95%	18.50	18.25	17.75
90%	18.375	18.125	17.625
Red brass			
85%	18.125	17.875	17.375
80%	17.875	17.625	17.125
Best Quality (71-80%)	17.50	17.25	....
Muntz metal	15.75	15.50	15.00
Nickel, silver, 10%	19.12½	18.87½	9.56¼
Phos. bronze, A	19.75	19.50	18.50
Naval brass	16.12½	15.87½	15.37½
Manganese bronze	16.12½	15.87½	15.25

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 19.50; No. 2 copper 18.50; light copper 17.50; composition red brass 16.00; radiators 13.00; heavy yellow brass 12.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 19.50; No. 2 copper 18.50; light copper 17.50; refinery brass (60% copper) per dry copper content 17.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 17.75-18.00; No. 2 16.50-16.75; light copper 15.50-15.75; No. 1 composition red brass 14.25-14.50; No. 1 composition turnings 13.75-14.00; mixed brass turnings 8.75-9.00; new brass clippings 15.00-15.25; No. 1 brass rod turnings 13.25-13.50; light brass 8.75-9.00; heavy yellow brass 10.00-10.25; new brass rod ends 13.50-13.75; auto radiators, unsweated 11.00-11.25; cocks and faucets, 12.75-13.00; brass pipe 13.00-13.25.

Lead: Heavy 9.50-9.75; battery plates 5.25-5.50; linotype and stereotype 11.50-11.75; electrotype 9.75-10.00; mixed babbitt 9.75-10.00.

Zinc: Old zinc 8.00-8.25; new die cast scrap 8.25-8.50; old die cast scrap 5.50-5.75.

Tin: No. 1 pewter 39.00-41.00; block tin pipe 60.00-62.00; No. 1 babbitt 30.00-32.00.

Aluminum: Clippings 2S 11.50-12.00; old sheets 8.50-9.00; crankcase 8.50-9.00; borings and turnings 5.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
July 20	22.50	11.80	15.00	91.00	17.50–18.50	24.50	48.00	72.75
July 19	22.50	11.80	15.00	89.50	17.50–18.50	24.50	48.00	72.75
July 18	22.50	11.80	15.00	91.00	17.50	24.50	48.00	72.75
July 17	22.50	11.80	15.00	91.75	17.50	24.50	48.00	72.75
July 14-15	22.50	11.80	15.00	96.50	17.50	24.50	48.00	72.75
July 13	22.50	11.80	15.00	92.00	17.50	24.50	48.00	72.75
July 12	22.50	11.30	15.00	87.25	17.50	24.50	48.00	72.75
July 11	22.50	10.80	15.00	84.75	17.50	24.50	48.00	72.75
July 10	22.50	10.80	15.00	82.75	17.50	24.50	48.00	72.75
July 7-8	22.50	10.80	15.00	81.375	17.50	24.50	48.00	72.75
July 6	22.50	10.80	15.00	80.50	17.50	24.50	48.00	72.75
July 5	22.50	10.80	15.00	79.75	17.50	24.50	48.00	72.75
July 3	22.50	10.80	15.00	79.25	17.50	24.50	48.00	72.75
July 1	22.50	10.80	15.00	78.75	17.50	24.50	48.00	72.75
June Avg.	22.231	11.608	14.769	77.668	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, July 20, 1950; gross tons. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

July 20	$37.25
July 13	36.75
June 1950	39.25
July 1949	19.21
July 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	*$41.00*
No. 2 Heavy Melt.	35.00
No. 1 Busheling	*41.00*
No. 1 Bundles	*41.00*
No. 2 Bundles	32.00-33.00
Heavy Turnings	*37.00-38.00*
Machine Shop Turnings	30.00-31.00†
Mixed Borings, Turnings	30.00-31.00†
Short Shovel Turnings	33.50-34.50
Cast Iron Borings	*32.00-33.00*
Low Phos. Steel	*45.00*

Cast Iron Grades

No. 1 Cupola Cast	37.00-38.00
No. 1 Machinery Cast	43.00-43.50
Charging Box Cast	41.00-41.50
Heavy Breakable Cast	36.50-37.50

Railroad Scrap*

No. 1 R.R. Heavy Melt.	*43.00*
Rails, Random Lengths	*43.00*
Rails, 2 ft. and under	*48.00*
Rails, 18 in. and under	*49.00*
Railroad Specialties	46.00
Axles	*44.00*
Angles, Splice Bars	45.00

* Brokers' offering prices.
† Crushers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steel	$38.00-39.00
No. 2 Heavy Melt. Steel	33.00-34.00
No. 1 Busheling	38.00-39.00
No. 1 Bundles	38.00-39.00
No. 2 Bundles	29.00-30.00
Machine Shop Turnings	24.00-25.00
Mixed Borings, Turnings	27.00-28.00
Short Shovel Turnings	27.00-28.00
Cast Iron Borings	27.00-28.00
Low Phos.	40.00-40.50

Cast Iron Grades

No. 1 Cupola	45.00-46.00
Charging Box Cast	41.00-42.00
Stove Plate	40.00-41.00
Heavy Breakable Cast	38.00-39.00
Unstripped Motor Blocks	31.00-32.00
Brake Shoes	33.00-34.00
Clean Auto Cast	45.00-46.00
No. 1 Wheels	41.00-42.00
Burnt Cast	35.00-36.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00
R.R. Malleable	49.00-50.00
Rails, 3 ft and under	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Rails, Random Lengths	48.00-49.00
Cast Steel	41.50-42.00
Railroad Specialties	*45.00-46.00*
Uncut Tires	49.00-50.00
Angles, Splice Bars	50.00-50.50

VALLEY

No. 1 Heavy Melt. Steel	$40.50-41.00
No. 2 Heavy Melt. Steel	35.50-36.00
No. 1 Bundles	40.50-41.00
No. 2 Bundles	31.50-32.00
Machine Shop Turnings	28.00-28.50
Short Shovel Turnings	30.50-31.00
Cast Iron Borings	30.50-31.00
Low Phos.	43.50-44.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00

PHILADELPHIA

No. 1 Heavy Melt. Steel	$33.00
No. 2 Heavy Melt. Steel	31.00
No. 1 Busheling	32.00
No. 1 Bundles	33.00
No. 2 Bundles	27.00-27.50
Machine Shop Turnings	23.00-24.00
Short Shovel Turnings	*29.00*
Mixed Borings, Turnings	22.00-23.00
Low Phos. Punchings and Plate, elec. fur. grade	*38.00-39.00*
Low Phos. Plate, 5 ft & Under	*38.00-39.00*
Elec. Furnace Bundles	34.00*
Heavy Turnings	33.00*
No. 1 Chemical Borings	34.00
Knuckles and couplers	*41.00-43.00*
Steel car wheels	*41.00-43.00*

Cast Iron Grades

No. 1 Cupola Cast	36.00
No. 1 Machinery Cast	39.00-40.00
No. 1 Yard Cast	*34.00*
Charging Box Cast	*36.00-37.00*
Heavy Breakable Cast	*36.00-37.00*
Clean Auto Cast	39.00-40.00
No. 1 Wheels	41.00-42.00
Malleable	43.00*

* Nominal.

CINCINNATI

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	31.00
No. 1 Busheling	37.00
No. 1 Bundles	37.00
No. 2 Black Bundles	30.00
No. 3 Bundles	26.00
Machine Shop Turnings	21.00
Short Shovel Turnings	24.00
Mixed Borings, Turnings	23.00
Cast Iron Borings	24.00

Cast Iron Grades

No. 1 Cupola Cast	47.00
Charging Box Cast	36.00
Stove Plate	33.00
Heavy Breakable Cast	*38.00*
Unstripped Motor Blocks	29.00
Brake Shoes	26.00
Clean Auto Cast	47.00
Drop Broken Cast	49.00
Low Phos., 18 in. and under	47.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.00
R.R. Malleable	44.00
Rails, Rerolling	44.00
Rails, Random Lengths	*42.00*
Rails, 18 in. and under	50.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	*$25.50-26.50*
No. 1 Bundles	*35.50-36.50*
No. 2 Bundles	*24.00-25.00*
No. 1 Busheling	34.00-35.00
Machine Shop Turnings	22.50-23.00
Forge Flashings	33.50-34.50
Short Shovel Turnings	23.50-24.50
Cast Iron Borings	23.50-24.50
Punchings & Plate Scrap	34.00-35.00

Cast Iron Grades

No. 1 Cupola Cast	39.00-40.00
Heavy Breakable Cast	32.00-33.00
Clean Auto Cast	43.00-44.00

BUFFALO

No. 1 Heavy Melt. Steel	$36.50-37.00
No. 2 Heavy Melt. Steel	33.00-33.50
No. 1 Busheling	33.00-33.50
No. 1 Bundles	34.00-34.50
No. 2 Bundles	31.00-31.50
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	27.00-28.00
Cast Iron Borings	27.00-28.00
Short Shovelings	29.00-30.00
Low Phos.	38.50-39.00

Cast Iron Grades

No. 1 Cupola	35.50-36.00
No. 1 Machinery	38.50-39.00
Malleable	32.50-33.00

Railroad Scrap

Rails, 2 ft. and under	46.50-47.00
Rails, random size	40.50-41.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$29.00-30.00
No. 2 Heavy Melt. Steel	26.00-27.00
No. 1 Busheling	27.00-28.00
No. 1 Bundles	29.00-30.00
No. 2 Bundles	25.00-25.50
Machine Shop Turnings	17.00-18.00
Mixed Borings, Turnings	17.00-18.00
Short Shovel Turnings	20.00-20.50
Punchings & Plate Scrap	30.00-31.00
Low Phos. Plate, 5 ft & under	30.00-31.00
Elec. Furnace Bundles	30.00-31.00

Cast Iron Grades

No. 1 Cupola Cast	29.00-29.50
No. 1 Machinery	30.00-31.00
Charging Box Cast	*29.00-29.50*
Heavy Breakable	*29.00-29.50*
Unstripped Motor Blocks	21.00-22.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$28.00-28.50*
No. 2 Heavy Melt. Steel	*22.50-23.00*
No. 1 Bundles	*28.00-28.50*
No. 1 Busheling	*27.50-28.00*
Machine Shop Turnings	*19.00-19.50*
Mixed Borings, Turnings	*17.00-17.50*
Short Shovel Turnings	*21.00-21.50*
Bar Crops and Plate	*33.00-35.00*
Punchings & Plate Scrap	*33.00-35.00*
Chemical Borings	21.00-21.50

Cast Iron Grades

No. 1 Cupola Cast	30.00-31.00
Mixed Cast	28.00-29.00
Heavy Breakable Cast	31.00-32.00
Stove Plate	26.50-27.00

CHICAGO

No. 1 Heavy Melt. Steel	*$37.50-38.00*
No. 2 Heavy Melt. Steel	35.00-35.50
No. 1 Bundles	*37.50-38.00*
No. 2 Bundles	29.00-30.00
Machine Shop Turnings	*24.50-25.50*
Mixed Borings, Turnings	*25.00-26.00*
Short Shovel Turnings	26.00-27.00
Cast Iron Borings	27.00-28.00
Low Phos.	39.00-40.00
Elec. Furnace Bundles	*38.00-39.00*
Heavy Turnings	29.00-30.00
Cut Structurals	38.00-39.00

Cast Iron Grades

No. 1 Cupola Cast	44.00-45.00
Clean Auto Cast	44.00-45.00
No. 1 Wheels	38.00-39.00
Stove Plate	36.00-37.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	39.00-40.00
Malleable	44.00-45.00
Rails, Rerolling	48.00-49.00
Rails, Random Lengths	*43.00-44.00*
Rails, 2 ft and under	*46.00-47.00*
Rails, 18 in. and under	*47.00-48.00*
Railroad Specialties	42.00-43.00
Angles, Splice Bars	*44.50-45.50*

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$29.00-30.00*
No. 2 Heavy Melt. Steel	*27.00-28.00*
No. 1 Busheling	29.00-30.00
No. 2 Bundles	*25.00-26.00*
Machine Shop Turnings	25.00-26.00
Mixed Borings, Turnings	26.00
Short Shovel Turnings	27.00-28.00
Cast Iron Borings	24.00-25.00
Bar Crops and Plate	*36.00-37.00*
Cut Structurals	36.00-37.00

Cast Iron Grades

No. 1 Cupola Cast	*38.00-39.50*
Stove Plate	33.00-34.00
No. 1 Wheels	33.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	35.00
R.R. Malleable	nominal
Rails, Rerolling	*43.00-44.00*
Rails, 2 ft and under	*42.00-43.00*
Angles and Splice Bars	40.00-41.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$36.00-38.00
No. 2 Heavy Melt. Steel	32.00-33.00
No. 1 Bundles	36.00-38.00
No. 2 Bundles	32.00-33.00
No. 3 Bundles	27.00-29.00
Machine Shop Turnings	19.00-20.00
Short Shovel Turnings	23.00-24.00

Cast Iron Grades

No. 1 Cupola Cast	39.00-41.00
Charging Box Cast	35.00-37.00
Heavy Breakable Cast	35.00-36.00
Brake Shoes	37.00-38.00
Clean Auto Cast	40.00-42.00
Burnt Cast	35.00-36.00

Railroad Scrap

R.R. Malleable	41.00-42.00
Rails, Rerolling	48.00-50.00
Rails, Random Lengths	39.00-41.00
Rails, 3 ft and under	45.00-46.00
Uncut Tires	38.00-39.00
Angles, Splice Bars	43.00-44.00
Railroad Specialties	41.00-42.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Bundles	18.00
No. 2 Bundles	17.00
No. 3 Bundles	15.00
Machine Shop Turnings	9.00

Cast Iron Grades

No. 1 Cupola Cast	*32.00-34.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Random Lengths	22.00

SEATTLE

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Busheling	17.50
Nos. 1 & 2 Bundles	18.00
No. 3 Bundles	16.00
Machine Shop Turnings	13.00
Mixed Borings, Turnings	13.00
Punchings & Plate Scrap	27.50-30.00
Cut Structurals	27.50-30.00

Cast Iron Grades

No. 1 Cupola Cast	*30.00*
Heavy Breakable Cast	27.50
Stove Plate	25.00
Unstripped Motor Blocks	25.00
Malleable	27.50
Brake Shoes	25.00
Clean Auto Cast	30.00
No. 1 Wheels	30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	21.00
Railroad Malleable	27.50
Rails, Random Lengths	21.00
Angles and Splice Bars	21.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	13.00
Machine Shop Turnings	7.50
Mixed Borings, Turnings	5.00
Punchings & Plate Scrap	30.50

Cast Iron Grades

No. 1 Cupola Cast	38.00-39.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Rerolling	33.00

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	39.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.

no. 1 railroad heavy melting steel*

use:

Used by open hearth furnaces in manufacturing new steels.

source:

Locomotive boiler casings, car under frames, railroad bridges, etc. All prepared to specification.

This is one of a series illustrating the various types of scrap used in making iron and steel. Call on our well trained and experienced organization to furnish this as well as any other grade of scrap. We solicit your inquiries.

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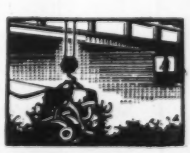

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Sheets, Strip . . .

Sheet and Strip Prices, Page 99 & 100

Boston — Except for electrical grades, sheet producers are increasingly cautious in making fourth quarter commitments. Some producers, operating on the basis of full-quarter allocation, held up October bookings; others, scheduling on a monthly basis, called a halt beyond October. Meanwhile, consumers are pressing for tonnage, asking for volume far in excess of mills' ability to produce and distribute. Newly placed government contracts are being used as a lever to secure requirements.

New York—While certain mills have set up schedules for October on major sheet products, little in the way of new tonnage is involved because bulk of it consists of arrearages. Actually, most sheet producers are behind on commitments anywhere from four to six weeks and the pressure for still more tonnage is as heavy now, if not heavier, than it has ever been. The majority of sheet mills, however, have done nothing with regard to the fourth quarter on the leading grades.

Driver-Harris Co., Harrison, N. J., has advanced stainless strip and wire 1.50 cents per pound.

Philadelphia—Sheet sellers generally are still holding off fourth quarter allocations at least insofar as major grades are concerned. They anticipate changes in present consumer pattern and are waiting as long as possible in setting up allotments. Some may not take action before the second week in August.

Pittsburgh — Pressure for flat-rolled steel is rising with consumers anticipating sharp pickup in military requirements. So far only a slight quickening in military needs is noted. However, expectations are military volume will swell quickly once the government determines upon a definite armament program. Allocations, either voluntary or mandatory, are expected to be applied at once on military work. In fact, producers already are giving precedence to military needs. So far civilian requirements have not been noticeably affected, but the chances are civilian needs will be increasingly shunted aside. Sheetmakers now are booked so far ahead they cannot possibly take on additional early shipment tonnage.

Bridgeville, Pa.—Universal-Cyclops Steel Corp. raised prices of its stainless steel products 1.50 cents to 5 cents a pound, effective as of July 21.

Cleveland—Marked increase in inquiry for flat-rolled steel from consumers outside this immediate district is noted. Anticipating further tightening in supplies as result of the war emergency buyers are seeking to build up stocks, being willing to pay for long freight hauls. All such inquiries are being screened carefully by producers and there is little possibility much tonnage will be accepted from other than regular customers.

Cincinnati—Sheet mills are pushing faciilties in efforts to meet commitments, yet are unable to meet demands. Makers of automobiles and household appliances, among others, report sustained consumer buying.

Chicago—Steel consumers who are trying to use their military orders as a means of obtaining "plus" tonnage are having little success. Some, making the same item for civilian and military use, are not willing to admit they must give ground somewhere. Producers here give no sign they will increase plate output to the detriment of sheet and strip. Household appliance firms, swamped with orders, are trying to expand production. Heating equipment firms are "desperate" for sheets and some face drastic curtailments in their operations. Farm equipment dealers are rapidly selling out stocks which a month ago appeared excessive. Even implements which will not be in use for several months are going like hot cakes. Activity is on the upsurge in gray market steel, but tonnage available in this channel is definitely limited.

Birmingham—Sheet mills are sold out and there is scant possibility of meeting demands. Buying is intensified in virtually every specification.

Oakland, Calif.—Kaiser Steel Corp. increased its price on low-carbon cold-rolled strip at Fontana, Calif., $7 per ton to $5.75 per 100 lb.

Los Angeles—Adjustments in rolling schedules have caused allocations for both hot-rolled and cold-rolled strip to be revised downward by 25 to 40 per cent.

San Francisco—No let-up is noted in the tight supply and heavy demand for all flat-rolled products. Offers of gray market steel are being received by some fabricators from the East.

Tubular Goods . . .

Tubular Goods Prices, Page 102

Boston — Merchant steel pipe is more active. Distributors' stocks are low and unbalanced. September allocations, now being booked, will be taken in full. Utilities also are showing more interest in forward requirements, although the natural gas program for New England has not crystallized to the point where definite needs may be established. Deliveries of mechanical tubing have lengthened sharply and now range from 16 to 18 weeks on some sizes.

New York—With many housing projects now being rushed to completion so that they will be ready for the fall renting season, demand for merchant pipe for plumbing and steam installations is exceptionally heavy. There is a fair volume of industrial requirements, but nothing comparable to housing needs.

Los Angeles—Public utilities' requirements sustain pipe demand. Southern California Gas Co.'s 1950 program for this district specifies replacement of 200 miles of gas mains and service pipe, ranging in size from 2 in. to 8 in., and 900 miles of new pipe.

San Francisco — Continued high level of home building has tightened supplies of galvanized steel and cast iron pipe. Demand is intensified by war fears.

Seattle—Some inquiry for cast iron pipe has developed although the market is not active. Bids are in at Portland, Oreg., for 450 tons 6 and 8 in. pipe. Several Washington cities are asking bids in the near future for small lots of cast iron pipe.

Stainless Steel . . .

Stainless Steel Prices, Page 102

Chicago — Consumers with conversion deals are reporting delays in receiving their material. Finishing capacity of many mills here is overtaxed. Highland Iron & Steel Inc., Terre Haute, Ind., is reportedly reducing its new billet purchases and concentrating on conversion bar tonnage using customer-supplied steel.

Steel Bars . . .

Bar Prices, Page 99

Boston—Widely spread demand for carbon bars has filled schedules well into the fourth quarter in some instances. Forge shops, screw machine, cold finishing and textile machinery outlets are pressing for bar tonnage.

Springfield, Mass., armory placed 600 tons, including alloys, with Copperweld Steel Co., Warren, O., Bethlehem Steel Co., Bethlehem, Pa., and Republic Steel Corp., Cleveland.

New York—An increasing number of hot carbon bar sellers are booking into the final quarter of this year. Demand is expanding rapidly, no little of it of a "scare" character, despite efforts of producers to keep purchases of their customers within the limits of their normal buying pattern. Warehouses, among other buyers, are pressing the mills especially hard.

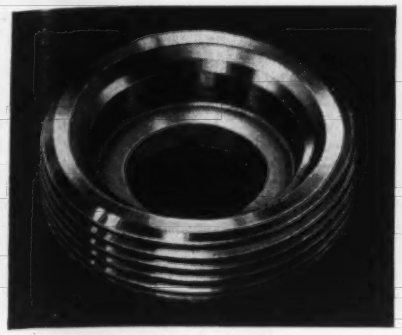
Jersey Shore Steel Co. has advanced rail steel angles, flats and bands 15 cents per 100 pounds to $3.45, f.o.b. mill, South Avis, Pa.

Sweet's Steel Co. advanced rail steel merchant bars $5 a ton, to the equivalent of 3.70c per pound, Williamsport, Pa., effective July 17.

Philadelphia—Hot carbon bar sellers that have opened books for the remainder of the year are practically sold out in the smaller sizes and have relatively little capacity left in the larger. Indications point to cuts in allotments as time passes and defense needs come to the fore.

Pittsburgh—Booked to the hilt with orders, barmakers anticipate further pressure as military needs shape up. The shortage of hot bars has been severe for some time past so that any additional armament requirements must be satisfied at the expense of the civilian consumers. Alloy bars already are in stronger demand as result of recent Army truck orders. More such orders are expected.

Chicago—Total bar requirements are beyond immediate satisfaction. Consumers of large quantities are trying unsuccessfully to cover their production requirements. Forgers are operating at capacity, but are running short of steel and get no encouragement from mills that final quarter quotas will be higher. Some forge shops are advising customers they have to supply their own raw material. One important mill has cut allocations to the Michigan area substantially, and pressure also has intensified on other suppliers. Several heavy machinery makers in this area have order backlogs extending through the rest of the year and are receiving a large volume of orders beyond that time.



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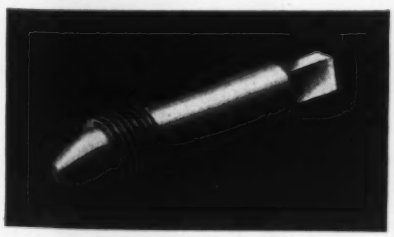

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Reinforcing Bars . . .

Reinforcing Bar Prices, Page 99

Chicago—Although bar fabricators are satisfied with their order backlogs, some important contractors continue to beg for work. Low bidders on a few major jobs recently are as much as 50 per cent under the quotations of prudent builders. Bar supply is low and unbalanced for some shops, but the clamor for more bars does not remotely approach that for flat-rolled.

Los Angeles — Fabricators' backlog, comfortably ahead of last years', keeps reinforcing bar demand brisk. Price-shading, while no longer extreme, has brought average prices for bars in place down to $7.50 per 100 lb, off $2 from last year's level.

Seattle — Demand for small tonnages of reinforcing bars, 20 to 50 tons each, for construction of schools and industrial plants, is insistent.

Plates . . .

Plate Prices, Page 99

Boston—While most producers are booking plates for fourth quarter, schedules are being watched closely as deliveries lengthen and availability of this product becomes more critical.

New York—Plate fabricators are placing increasing pressure on mills, but are meeting with little success as producers are having increasing difficulty meeting commitments already on their books. All are sold out for the current quarter and will probably have an average carryover by the end of September of from three to four weeks.

Philadelphia—A leading plate producer has set up fourth quarter allocations and others are accepting limited tonnage for the period. Some mills, due to mechanical difficulties, will have a substantial carryover at end of this quarter; others are counting on arrearages of not more than two weeks. Demand is very heavy, especially for light gages. Considerable car inquiry current and in early prospect is adding to the pressure. Considerable speculation prevails as to how soon strip mills will be called upon to convert capacity to production of light plate.

Pittsburgh — Platemakers are accepting business for fourth quarter but with heavy carryover from third quarter in prospect buyers' requests are being screened carefully. So far, only limited new demand for military requirements has come through. Expectations are this tonnage will increase steadily over coming months. Inquiry for freight car needs is heavier but so far as can be learned no new substantial tonnage for car construction has yet been placed.

Chicago—Tank makers, who only recently had little or no business on their books, are booked to capacity and are having serious trouble obtaining steel. Large pipe makers are responsible for much of the plate demand, but are not accorded preferential treatment as to allocations. The booming pipeline program may persuade one major mill to turn to large diameter seamless pipe.

Birmingham—Plates, no less than other items in steel, are in greater demand than supply.

Seattle—Union Oil Co. plans early construction of a $1 million asphalt refinery at Edmonds, near here. General contract has been placed with Betchel Corp., San Francisco. Unstated tonnages of plates for tanks and other steel items are involved.

Structural Shapes . . .

Structural Shape Prices, Page 99

Boston — Fabricating shops are pressed to make October delivery on medium tonnage projects. Deliveries on plain materials are even more extended in some instances and more tonnage is being offered Pittsburgh mills. Books of the latter also are well loaded and deliveries extend into November on some sizes. Inquiry for fabricated steel holds well with bids in on 2000 tons for new bridges in Massachusetts. A proposed arterial highway in Boston will take at least 50,000 tons.

New York—Public construction, particularly bridge work, is going ahead rapidly, although the end of some programs are now definitely in sight. Fabricators are booked ahead three to four months, in most cases.

Pittsburgh — Substantial demand for structurals and building steel continues to be experienced. Even though order volume does not compare with that in the lighter products the mills are booked many weeks ahead in most items. Order backlogs are sufficient to support high-level production into fall and they would be even larger were producers disposed to commit themselves farther ahead.

Chicago—Fabricators have mixed opinions on the effect of the Korean war and the consequent build-up in steel demand on their operations. Some few projects have canceled out because of the uncertainties of the times; others are being rushed in the fear that steel allocations will be imposed. Residential construction is bound to contract somewhat as the result of tighter government credit restrictions. Prices are firming up on new jobs, and some mills reinstituted quota systems on structural shapes for third quarter delivery. Freight car demand, now in eruption, has tightened steel supplies considerably.

Birmingham—Shape demand is moderate. Several long-delayed projects are under way while some, just about ready for consummation, have been held up temporarily in view of unsettled national conditions. Most fabricators are reasonably busy.

Seattle — Fabricators report considerable hand-to-mouth business in less than 100 tons each, buyers insisting on prompt delivery. Backlogs are not large and new contracts are sought.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 102

Pittsburgh—Quality coking coal is scarce, making it difficult to turn out all the high-grade coke demanded by the trade. Consumers are compelled to take less desirable coke and there does not appear to be any prospect for any improvement in conditions. Vacation shutdowns of foundries have taken some of the demand-pressure off of the market but with heavier military orders likely over coming months coke sellers anticipate increasingly tight supply conditions.

St. Louis—Oven coke prices have advanced $1.50 a ton to $24.15 delivered to foundries in this city. Coke for shipment across the river to E. St. Louis has advanced $1 a ton to $23.99, delivered.

Wire . . .

Wire Prices, Page 101

Boston—Wire mills, having filled schedules for rolling major items in the third quarter, are allocating tonnages for early fourth quarter for which period most consumers are asking for more tonnage. Heading wire, upholstery spring wire and wire in automotive categories are taken up. An increase is noted in buying of aircraft wire and cable.

New York—Nail demand has taken a particular spurt. One leading distributor sold more nails during two days last week than in the entire month of June. Some of this demand, he said, came from contractors who went in heavily for cantonment construction prior to the last war.

Nails are being received in increasing volume from Great Britain, Belgium, France, Germany and Japan. Foreign prices are still substantially lower than domestic prices, possibly averaging $20 to $25 a ton less.

New York—Scare buying is having an effect on wire business. There has been an appreciable pick-up in demand for most merchant and manufacturers' items. In some of the high carbon specialties, the improvement in buying has been particularly pronounced. One manufacturer reports that since the first of this month his backlog has virtually doubled.

Pittsburgh—Anticipating some form of allocation or priorities in the near future because of the serious world political situation and the war in Korea, wire product consumers are stepping up requirements noticeably. Buyers of spring wire that had been ordering only moderate quantities earlier this year, for instance, now are seeking to build up 60 to 90 day inventories. Nail demand is said to have quadrupled over recent weeks. Buyers who had deserted mills in this area when f.o.b. pricing became effective now are returning with pleas for tonnage, willing to pay any price just to get position on mill books.

Cleveland—Heavy volume of wire product inquiry is being entertained by producers, some of it reflecting intensified efforts of consumers to build stocks in anticipation of further tightening in supply conditions. Sellers indicate they are discouraging "hoarding" and are screening all inquiries carefully.

Chicago—Most wire items are tightening because of normal seasonal plus war-scare buying. Paper clip wire, for example, is in extremely heavy demand, some office supply houses saying customers are buying ten times their usual quantities in anticipation of allocations.

Los Angeles—Heavy demand for wire is stemming from large automotive requirements and seasonal purchases of bed-spring makers.

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Pig Iron . . .

Pig Iron Prices, Page 98

Boston—Pig iron melt is unchanged at well below capacity and there is no bulge in demand for that material. Requirements are slightly heavier, due in part to resumption of operations following vacations, but most consumers feel that raw materials will be available under controls and, therefore, are not rushing to cover future needs. The larger consumers in the textile mill equipment industry are melting 50 to 60 per cent of capacity, which in effect is equal to former capacity, most of them having increased facilities in the last few years. A large portion of basic being melted is of foreign origin.

New York—There is a definite quickening in pig iron demand. While some sellers still believe that July volume will be under June, because of mass vacations at various foundries, the decline will be definitely less than anticipated.

Buffalo—Decided improvement is noted in general foundry demand for pig iron. Sellers, however, say any attempt by consumers to stockup on material in anticipation of heavy government work will meet with little success as current melting operations require capacity iron production.

Philadelphia—Despite curtailments at consuming plants due to mass vacations pig iron sellers now believe this month's volume will exceed June's. Consumers generally appear anxious to build up inventories.

Pittsburgh—Tight pig iron supply conditions will be relieved somewhat by restoration of the Pittsburgh Coke & Chemical Co.'s stack to production. This furnace was blown in July 15 after being down 60 days for relining. Its output is committed far ahead on orders that have been piling up on company books.

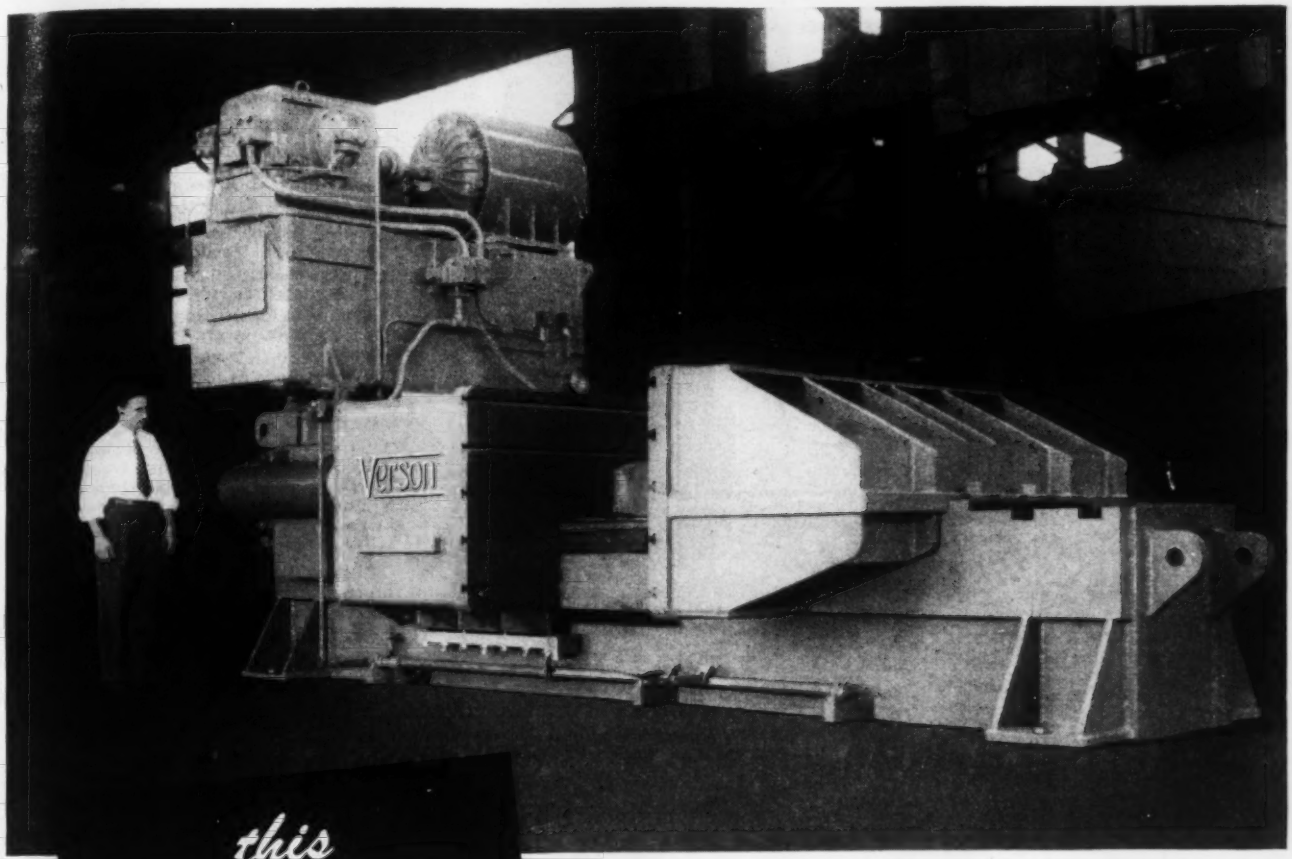
With heavier military demand in prospect pig iron producers are worrying about iron ore supplies. Unless a late shipping season is experienced the carriers may not be able to bring down enough ore to assure adequate spring stocks.

Cleveland—Merchant iron buyers are pressing the furnaces for additional tonnage but there is little chance they will be able to materially augment stocks with producers booked to capacity for months ahead. Military requirements are expected to put additional burden on the furnaces. Such tonnage will get precedence at the expense of civilian needs. New inquiries are being screened closely by sellers.

Cincinnati—Ordering of foundry iron is heavier, some melters supplementing original specifications for July. Vacations are cutting into the melt; hence, general belief is that desire for larger inventories is developing. Shipments from some northern furnaces are lagging 30 to 60 days.

Chicago—Inland Steel Co. has blown in its No. 3 blast furnace, bringing all eight stacks into operation.

Birmingham—Merchant iron men are in the same "terrific sweat" they were in two years ago. Orders for pig iron chiefly from soil and cast iron pipe producers, are swamping local melters.



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Scrap . . .

Scrap Prices, Page 106

Boston — Steel scrap prices are steady at lower levels with differentials between grades still somewhat out of line compared with normal ones. Short shoveling turnings, No. 1 busheling, and mixed borings and turnings are slow.

New York—Brokers' buying prices are generally unchanged except for an increase in charging box and heavy breakable cast to $29-$29.50, fob shipping point. Consumer buying is on the quiet side, with an easier car supply facilitating shipments against current contracts.

Buffalo—Fears of goverment price controls mounted in the scrap market following the previous week's sale of approximately 25,000 tons at price declines of $2. It is generally expected that controls, if they come, will be below prevailing ranges.

Philadelphia — Consumers have made further purchases of open hearth grades at unchanged prices.

Other steel grades also are unchanged except for increases in low phos to $38-$39 and in short shovel turnings to $29, and except for a decrease in knuckles and couplers and steel car wheels to $41-$43. No. 1 yard cast is slightly easier at $34 and charging box and heavy breakable stronger at $36-$37.

Pittsburgh—Although buyers and sellers largely are marking time pending developments in the war emergency the market displays an increasingly strong tone. No. 1 heavy melting steel last week advanced to $41 per ton, up $1, on a reported purchase which marked re-entrance as a buyer of a leading mill.

Brokers and dealers are not pressing the market too hard. Since high steelmaking operations are assured for months to come they are inclined to sit back and await the development of orders from the mills. At the same time they are anxious to keep prices from running away, fearing imposition of government price control should the market get out of hand.

Cleveland—Long-range view of the scrap market here generally is bullish. Shipments are being received in good volume, but new buying is light as all interests await pending changes in the nation's economy. It is pointed out that considerably less steel will be channeled back to the mills in the form of scrap under war production conditions than would be under normal peacetime operations. At the same time, consumption will hold close to capacity levels.

Large brokerage interests are cognizant of their responsibility in the present crisis to prevent a runaway market. As evidence of their good faith they have sold tonnages on the basis of $41, Valley. They are urging dealers, industrial plants and railroads also to sell at current levels as part of the overall effort to stabilize the market.

Detroit—Mixed sentiment prevails, leaning toward the bullish side as some mills have started discussion of renewing their scrap buying on a large scale.

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Right now management has an unusual opportunity to gain employee-relations value from the high public interest these genii have created for U. S. Savings Bonds. During the Treasury Department's Independence Drive, May 15-July 4, every major advertising medium has been used to broaden the people's interest in Savings Bonds as a means of building financial independence. Now, more than ever, as a result of this all-out campaign, your employees will appreciate the convenience of being able to obtain Bonds "automatically" via the Payroll Savings Plan.

If your company doesn't yet have the Payroll Savings Plan, now's the most opportune time for you to install it!

If your company does have the Plan, now's the time to remind employees about it!

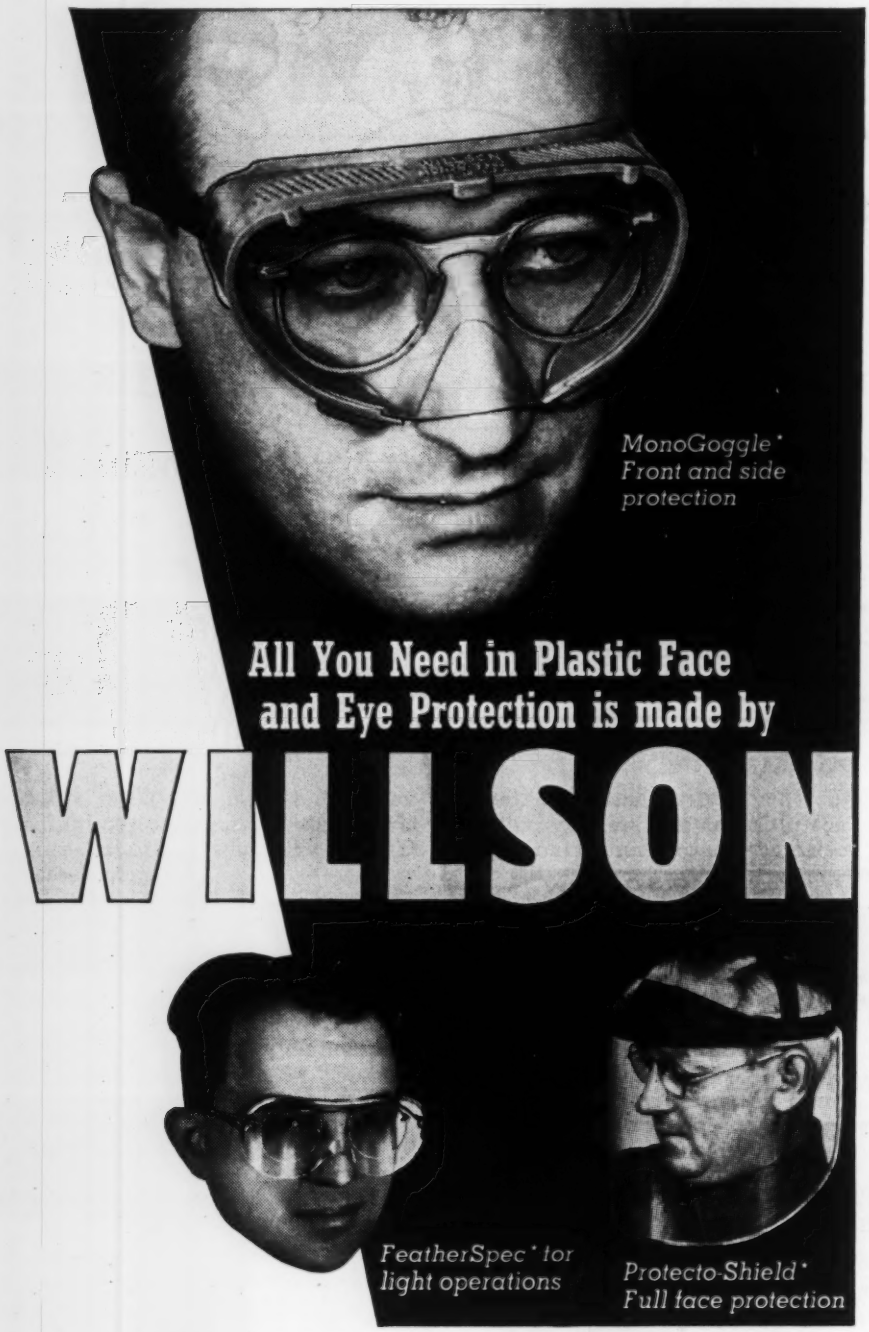
Employees who pile up money in Savings Bonds feel more secure . . . are actually better workers. Moreover, Bond sales build a backlog of future purchasing power—good "business insurance" for all of us in the years ahead.

Payroll Savings is good for your employees, your business, and your country. "Push the button"—call in one of your top executives and appoint him Savings Bonds Officer. All the material and assistance he may need are available from your State Director, Savings Bonds Division, U. S. Treasury Department.

The Treasury Department acknowledges with appreciation the publication of this message by

STEEL

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.



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Dependable Products Since 1870

These three types of protective devices, all with one-piece plastic lenses or visors and each with many variations, give you a wide selection to meet specific requirements of work hazards. Their light weight and comfortable fit insure workers' willingness to wear them for long hours on the job. Complete information on plastic protection and other eye and respiratory safety equipment is available in the new WILLSON catalog. Get your copy from our nearest distributor or write direct to WILLSON PRODUCTS, INC., 233 Washington Street, Reading, Pa.

*T.M. Reg. U.S. Pat. Off.

Cincinnati—Prices on iron and steel scrap have leveled off and, although shipments are moving steadily, the mills are frugal with new orders. The market has the appearance of marking time.

Chicago—Firmer market for most scrap grades is to large extent based on heightening of war activity. Traders, however, are convinced that any allocation program would automatically make necessary reinstitution of some kind of price control. Opinion over the effect of war mobilization on scrap consumption is mixed.

Birmingham—Scrap has taken on new life with increases posted in several important items, notably heavy melting which has jumped to $29-$30. No. 1 cupola cast is up to $38-$39.50.

Iron Ore . . .

Iron Ore Prices, Page 103

Cleveland—With loading delays eliminated at the docks, ore and coal shipments last week were expected to be the largest of the season to date. Lake Superior iron ore shipments from upper lake ports for the week ended July 17 increased to a new high for the season at 3,110,078 tons compared with 2,726,050 for the preceding week and 2,907,937 for the like week a year ago. The Lake Superior Iron Ore Association, this city, reports shipments from United States ports totaled 3,077,049 tons, or at an average daily loading rate of 439,578 tons, reducing the deficit for the season to July 17 to 12,118,747 tons. Shipments from all ports to July 17 came to 28,238,218 tons compared with 40,239,376 tons for the like period a year ago.

Consumption of iron ore held fairly steady during June, amounting to 7,226,901 tons compared with 7,362,238 tons in May, bringing total for the first half to 39,715,037 tons against 43,164,766 tons in the like period a year ago.

Total stocks on July 1 amounted to 19,189,363 tons, an increase of 4,804,920 tons for June but still showing a large deficit when compared with the 27,696,146 tons on hand a year earlier.

There was no net change in the number of furnaces in blast in the United States on July 1 compared with a month previously, holding at 170 with 13 idle.

Rails, Cars . . .

Track Material Prices, Page 101

New York—A large program of freight car buying, involving a minimum of 60,000 cars, will come up for consideration at a meeting of members of the Association of American Railroads in Chicago, July 28.

Cleveland—Directors of Chesapeake & Ohio Railway have authorized expenditure of $20 million for 4000 freight cars, including 3000 seventy-ton coal hopper cars and 1000 fifty-ton box cars.

Denver—Colorado Fuel & Iron Corp. advanced prices for track bolts 25 cents per 100 lb to the basis of $8.85 for untreated and $9.10 for treated, f.o.b. cars mill, Minnequa, Colo.

Warehouse . . .

Warehouse Prices, Page 103

New York—Leading jobbers here are being literally deluged with orders for steel. Spurt has been particularly noticeable within the past two weeks and is ascribed in no small part to war jitters. Cold-rolled sheets are in special demand, although light gage plates are not far behind.

Philadelphia—Distributors are being fairly swamped with requests for tonnage. A number of inquiries involve mill size quantities and cover a wide variety of products. As much of this demand is of a "scare" nature and represents more than current requirements, the warehouses are turning away considerable business.

Pittsburgh—Local warehouses are under mounting pressure from customers seeking tonnage beyond their normal take. This reflects not only efforts to augment stocks in anticipation of some form of priorities, but also attempts to make up mill shipment deficits from warehouse stores.

Cleveland—Local distributors are in receipt of a growing volume of inquiry from consumers that ordinarily satisfy their requirements at the mill level. However, the scarcity of mill tonnage is prompting some buyers to increase their warehouse inquiries in hope of partially offsetting their mill shipment deficits.

Cincinnati — Steel supply from warehouses has worsened. Pressure for deliveries and inquiries are heavier. Mill shipments fail to keep pace on a broad list.

Seattle—Increased buying is reported by the warehousing trade, some of it due to fear of war shortages. Some houses state their current volume is the largest in the last four years. Plates are again active after a dull period. Stainless steel has advanced $2.35 due to mill increases and higher freights.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4500 tons, 21-story office building, 260 Madison Ave., New York, through Hageman & Harris, general contractors, to Harris Structural Steel Co., that city.

1750 tons, No. 33, New Jersey turnpike, Camden and Gloucester counties, through F. A. Canuso & Sons, Philadelphia, to Belmont Iron Works, Eddystone, Pa.

1980 tons, No. 37, New Jersey turnpike, Burlington and Mercer counties, through Conduit & Foundation Corp., Philadelphia, to American Bridge Co., Pittsburgh.

1250 tons, hospital, Harrisburg, Pa., to Bethlehem Steel Co.

1150 tons, state bridge, Lancaster county, Pennsylvania, to Lehigh Structural Steel Co., Allentown, Pa.

1005 tons, Darling Towers apartment, Wilmington, Del., to Bethlehem Steel Co.

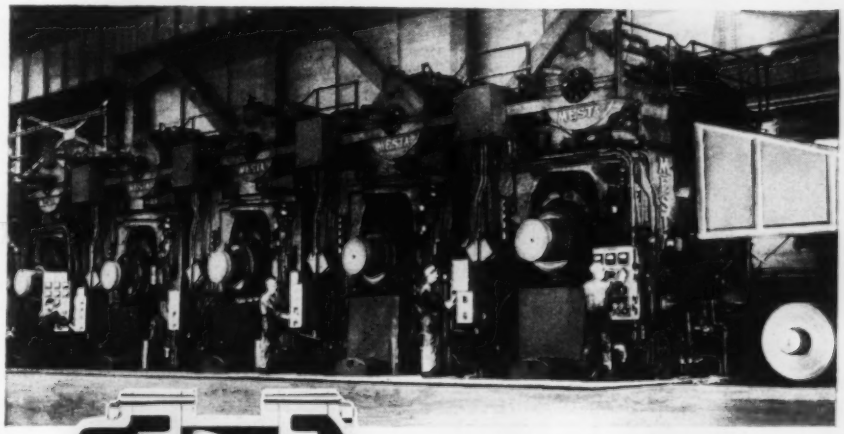
1000 tons, high school, East Providence, R. I., to American Bridge Co., Pittsburgh; E. Turgeon Construction Co. Inc., Providence, R. I., general contractor.

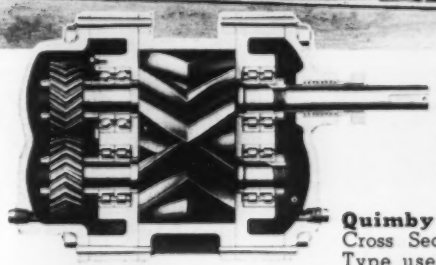
900 tons, power plant addition, Potomac Power & Electric Co., Washington, to Belmont Iron Works, Philadelphia; Stone & Webster Engineering Corp., Boston, engineer-contractor.

545 tons, 16-story apartment, for 750 Park Inc., 72nd St. & Park Ave., New York, to Harris Structural Steel Co., that city.

500 tons, 12-story office addition, Massachusetts Bonding & Insurance Co., Williams

QUIMBY PUMPS
hold 7 "key" jobs in World's Fastest Cold Strip Mill





Pumping for this Pacemaker—Quimby Pumps lubricate this Mesta 42" five stand tandem cold mill, installed at the Aliquippa Works of the Jones and Laughlin Steel Corporation.

Quimby "Rotex" Pump—Cross Section of Gear-in-Head Type used in World's Fastest Strip Mill.

Fourteen Quimby "Rotex" and Screw Pumps perform the key jobs of lubricating this pacemaking strip mill. At seven vital points the reliability and efficiency of these Quimby Pumps assure smooth operation and help maintain the productive pace. Exceptionally rugged, they keep maintenance at a minimum.

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H. K. PORTER COMPANY, Inc.
Quimby Pump Division
PITTSBURGH 1, PENNSYLVANIA *District Offices in Principal Cities*

street, New York, through George A. Fuller & Co., general contractor, to Harris Structural Steel Co., that city.

500 tons, Memorial High School, Hazleton, Pa., to Weatherly Steel Co., Weatherly, Pa.

500 tons, Tri-State bridge, Hammond, Ind., to American Bridge Co., Pittsburgh.

465 tons, store, Sears Roebuck & Co., Washington, to Belmont Iron Works, Eddystone, Pa.

380 tons, warehouse, Scott Paper Co., Chester, Pa., to Belmont Iron Works, Eddystone, Pa.

360 tons, office, Scott Paper Co., Chester, Pa., to American Bridge Co., Pittsburgh.

345 tons, National Gypsum Co., Clarence, N. Y., warehouses, addition and alterations, to Ernst Construction Co., Buffalo; John W. Cowper Co. Inc., Buffalo, general contractor.

325 tons, building No. 66, Rohm & Haas Co., Bristol, Pa., to Bethlehem Steel Co.

300 tons, Foster avenue work, Chicago, to American Bridge Co., Pittsburgh.

265 tons, apartment, Yellowstone boulevard, at 67th drive, New York, to Grand Iron Works, that city.

255 tons, new library, Buffalo State Teachers College, Buffalo, to Buffalo Structural Steel Co., Buffalo; John W. Cowper Co. Inc., Buffalo, general contractor.

175 tons, warehouse, Richmond Grocery Co., Philadelphia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

100 tons, Staples Point bridge, Maine, to Bancroft & Martin, Portland, Me.; A. P. Wyman, Waterville, Me., general contractor.

STRUCTURAL STEEL PENDING

9000 tons, No. 44, New Jersey turnpike, Elizabeth; bids Aug. 1; also required are 45 tons of castings, 8950 sq ft of open steel gratings and 8400 ft of railings.

5347 tons, No. 38, New Jersey turnpike, Middlesex county; Brann & Stuart Co., Philadelphia, low on general contract with bid of $4,648,392.95.

3000 tons, No. 50, New Jersey turnpike, Bergen county; bids Aug. 1; also required are 160,000 ft of steel piles or 121,000 ft of cast-in-place concrete piles and 80 tons of low-alloy steel drainage troughs.

2102 tons, sewerage treatment plant, Providence, R. I.; general contract awarded to F. H. McGraw & Co., New York.

1600 tons, stringer bridges, state highway project, Acton - Boxborough - Harvard-Littleton, Mass.

1500 tons, No. 53, New Jersey turnpike, F. A. Canuso & Sons, Philadelphia, low on general contract.

1055 tons, No. 41, New Jersey turnpike, Mercer and Middlesex counties; Construction Service Co., Bound Brook, N. J., low on general contract with a bid of $1,080,913.

1040 tons, No. 57, New Jersey turnpike, Burlington and Mercer counties; bids July 28.

700 tons, Public School 121, Bronx, N. Y.; bids July 28.

600 tons, municipal bus terminal and parking garage, Bridgeport, Conn.; bids closed.

400 tons, state bridge, Adams, Mass.; bids in.

270 tons, health center, Jamaica, N. Y., pending; this was erroneously reported last week as having been awarded to a northern New Jersey fabricator.

225 tons, also 90 tons reinforcing, Sacramento river bridge near Redding, Calif.; bids soon to Bureau of Reclamation, Denver.

120 tons, King county river bridge; bids in to Commissioners, Seattle, July 17.

105 tons, and miscellaneous plates and bars, streamlining diesel locomotive; bids to General Services Administration, Seattle, July 26.

Unstated, warehouse; bids soon to Bureau of Reclamation, Ephrata, Wash.

Unstated tonnage, No. 32, New Jersey turnpike; Napp-Grecco Co., Newark, N. J., low with a bid of $772,862.75.

Unstated, pumping plant, Bureau of Reclamation, Ephrata, Wash.; general award to United Concrete Pipe Co., Baldwin Park, Calif., low $491,041.

Unstated, two radial gates, two hoists for Potholes East canal, Columbia Basin project; also four high pressure gates, and equipment for Trenton dam, Missouri Basin project; bids for both to Bureau of Reclamation, Denver, Aug. 8.

PIPE . . .

CAST IRON PIPE PENDING

450 tons, 12 to 4 in. pipe and fittings; bids to H. T. McGowan, city clerk, Bremerton, Wash., July 26.

200 tons, 19,000 ft of 6 in. cast iron pipe and fittings; bids to Charles Bridges, clerk, Kent, Wash., July 17.

60 tons, system extension; bids to Aberdeen, Wash., July 19.

Unstated, 2000 ft of 6 in. pipe and accessories; bids to J. G. Henry, clerk, Skykomish, Wash., Aug. 7.

Unstated, 9-mile distribution system, pumps, tank and reservoir; bids to Pasco Heights Domestic Water Association, Pasco, Wash., July 31.

STEEL PIPE PENDING

Unstated, 1200 ft of 6 in. pipe and 1200 ft of 8 in. (submarine crossing); Moses Lake, Wash.; general contract to R. L. Moss, low $56,427 for steel, $64,244 for cast iron.

REINFORCING BARS . . .

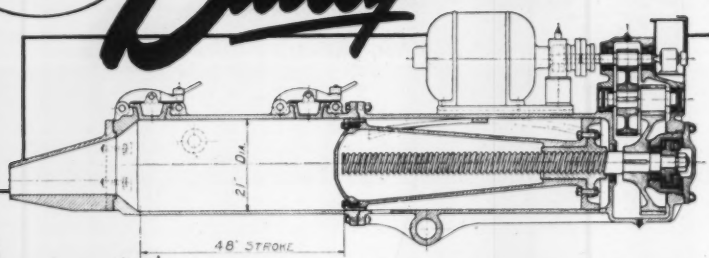
REINFORCING BARS PLACED

435 tons, Fulton County Courthouse annex, Atlanta, to Southern General Fireproof Co., Atlanta; Christian Bell Co., Atlanta, general contractor.

145 tons, Washington state Broadway cut

Long and Uniform Tapping Holes

Bailey CLAY GUN



Powerful

A powerful electrically-driven piston assures unfailing performance.

Best results and safety in plugging blast furnace tapping holes are obtained with the Bailey Clay Gun. The special Bailey Lever Action forces the nose of the gun forward with positive accuracy. A powerful, motor-driven screw provides the piston pressure necessary to maintain long tapping holes.

WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD PITTSBURGH 16, PA.

bridge, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

1500 tons, No. 38, New Jersey turnpike; Brann & Stuart Co., Philadelphia, low on general contract.

1400 tons, No. 44, New Jersey turnpike, Elizabeth; bids Aug. 1.

1200 tons, estimated, municipal bus terminal and parking garage, Bridgeport, Conn.; bids closed.

787 tons, No. 57, New Jersey turnpike, Burlington and Mercer counties; bids July 28.

650 tons, No. 5, New Jersey turnpike, Bergen county; bids Aug. 1.

480 tons, No. 41, New Jersey turnpike, Mercer and Middlesex counties; Construction Service Co., Bound Brook, N. J., low on general contract.

445 tons, No. 39, New Jersey turnpike, Union county; Koppers Co. Inc., Baltimore, low on general contract with a bid of $517,952.50; also, 3500 feet of steel bearing piles are required.

PLATES . . .

PLATES PLACED

1200 tons, 36 in water pipe, city of Portland, Oreg., system extension, to American Pipe & Construction Co., Portland; general contract to Parker & Schram Co., Portland, low $407,050.

160 tons, 42 and 48 in. welded pipe, Allentown-Bethlehem Gas Co., Allentown, Pa., to Bethlehem Steel Co.

100 tons plus, 500,000-gal water tank for Hazelwood district, Portland, Oreg., to Chicago Bridge & Iron Co.

100 tons plus, 80,000-bbl. storage tank for Union Oil Co., Portland, to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

500 tons, penstocks for Lookout Point dam, Oregon; bids in to Morrison-Kiewit-Macco, general contractors.

Unstated, asphalt refinery, Edmonds, Wash., for Union Oil Co.; general contract to Betchel Corp., San Francisco.

Unstated, 4104 ft 36 in. and 8604 ft 30 inch steel water pipe; bids to Spokane, Wash., July 20.

Unstated, two transformer oil storage tanks; bids to Bureau of Reclamation, Denver, Aug. 2.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chesapeake & Ohio, 3000 seventy-ton coal hopper cars, of which 2000 to American Car & Foundry Co.'s shops at Huntington, W. Va., and 1000 to Bethlehem Steel Co.'s shops at Johnstown, Pa.; 1000 fifty-ton box cars, to Pullman-Standard Car Mfg. Co.'s shops at Michigan City, Ind.

Canadian National, 28 fifty-ton steel air-dump cars, to Eastern Car Co., Trenton, N. S., Canada.

Metropolitan Transit Authority, Boston, 40 subway cars, to St. Louis Car Co., St. Louis.

Metropolitan Transit Authority, Boston, 25 Presidents' Conference electric cars, to Pullman-Standard Car Mfg. Co., Worcester, Mass.

Southern, 250 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

Virginian, 500 fifty-five-ton hopper cars, to own shops at Princeton, W. Va.

RAILROAD CARS PENDING

Atlantic Coast Line, 300 covered hopper cars; pending.

Baltimore & Ohio, 300 flat car underframes; bids asked.

Lehigh Valley, 300 mill-type gondolas; bids asked.

New York Central, 4500 cars, bids asked; list comprises 1500 seventy-ton drop-end gondolas, 1500 fifty-five ton hoppers, 1000 fifty-five ton, 40-ft 6-in. box bars, and 500 fifty-five ton, 55-ft 6-in. box cars.

RAILS PLACED

Lehigh Valley, 3000 tons, to Bethlehem Steel Co.

Bangor & Aroostock, 2050 tons, to Bethlehem Steel Co.

FERROALLOYS

(*Continued from Page* 103)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1¢, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

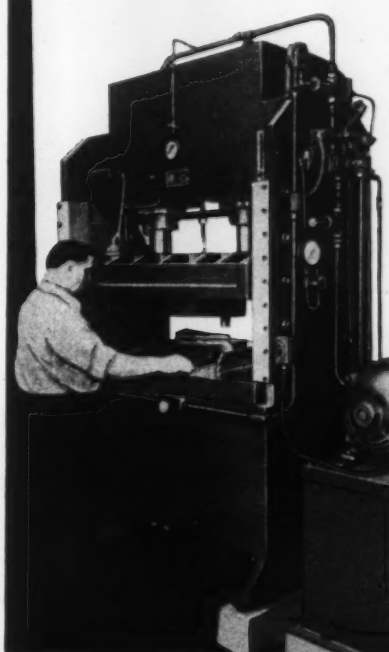
Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium.

No risks of parts seizure or oil breakdown here . . . TEMPERATURE IS PROTECTED!

On its hydraulic presses, like the 100-ton KRW model shown, K. R. Wilson provides its customers with the temperature protection of a Ross Exchanger. For this well known press builder, like many others, does not believe in passing the risk of parts seizure and oil breakdown on to its users.

But equipping this press with an exchanger was no ordinary job. It called for a unit capable of withstanding a momentary pulsation in the discharge side of the hydraulic system within the small fraction of a second required for reversal of the spool in the solenoid-controlled, pilot-operated control valve. The new Ross Type BCF, with its heavy duty construction, more than measured up to the job.

Buyers of all types and makes of hydraulic equipment have learned to ask for factory-furnished Ross Exchangers. They want assurance that the fluid will be maintained *constantly* at safe and effective temperatures.



★ *FREE* — For detailed information on how Type BCFs can improve the production of your hydraulic equipment, write for Bulletin 1.1K1. Ross Heater & Mfg. Co., Inc., Div. of American Radiator & Standard Sanitary Corp., 1431 West Ave., Buffalo 13, N. Y. In Canada, Horton Steel Works, Limited, Fort Erie, Ont.

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EQUIPPED

Serving home and industry— AMERICAN STANDARD • AMERICAN BLOWER

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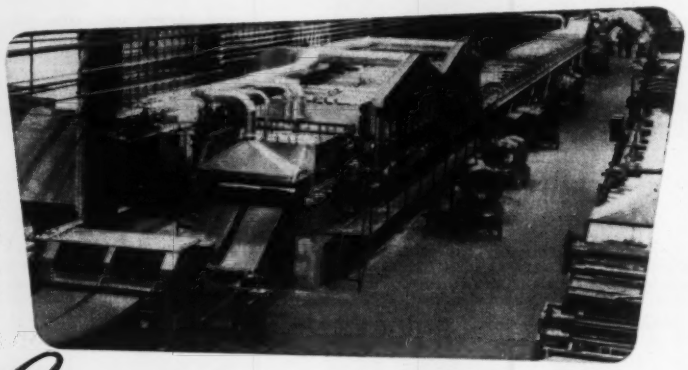

• *EF Special Atmosphere Roller Hearth Furnace Continuously Bright Normalizing Two Strands of 27" Strip — Capacity 7200 Lbs. Per Hour.*

ANNEALING STRIP STEEL
Continuously
IMPROVES THE DRAWING QUALITIES

• EF continuous annealing and normalizing furnaces subject the entire length, and width of the strip to *exactly the same* time and temperature treatment, resulting in extreme uniformity of grain size, yield point, and completeness of recrystallization;— all definite advantages for deep drawing. They tie-up a minimum of material in process; — usually *cost less* than batch equipment of equivalent capacity.

EF

Capacities to 28,000 lbs., or more, per hour — single or multiple strands to 54", or wider. Send today for complete details.

THE ELECTRIC FURNACE CO.
GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION
Salem - Ohio

For Greater PRODUCTION EFFICIENCY SAVINGS

use an individually designed "Hole-Hog" Machine Tool for such jobs as:

- Multi-Spindle Boring
- Single and Multi-Spindle Honing
- Straight Line Multi-Drilling
- Adjustable Spindle Drilling
- Vertical and Way-Type Fixed Center Drilling, Boring and Tapping
- Special Multiple Operation Machine Tools

Our 50 years of Machine Tool Engineering Experience is at your service. Tell us your particular problem.

MODEL HU68 universal joint type driller performing core drilling, reaming and facing operation on forged steel parts.

MOLINE TOOL COMPANY
100 20th Street Moline, Illinois

MOLINE TOOL CO. HOLE-HOG MOLINE ILLINOIS

ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon. Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C

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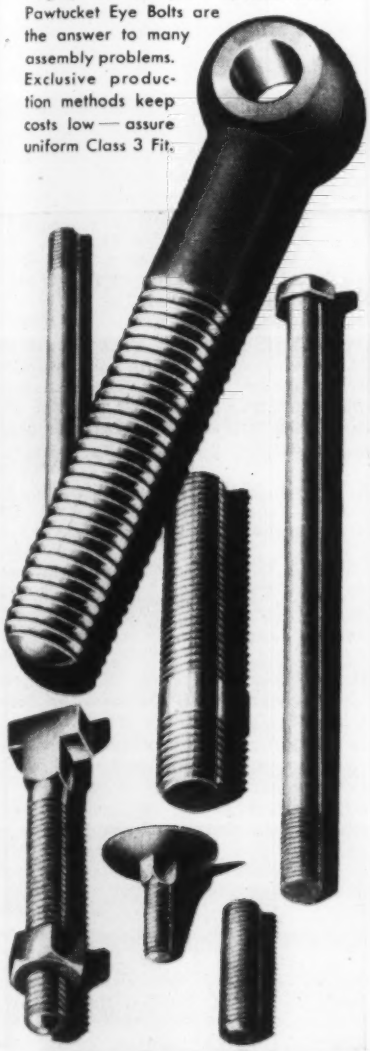

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3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min. C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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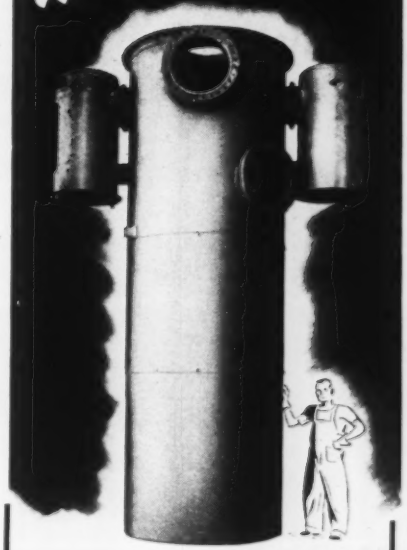

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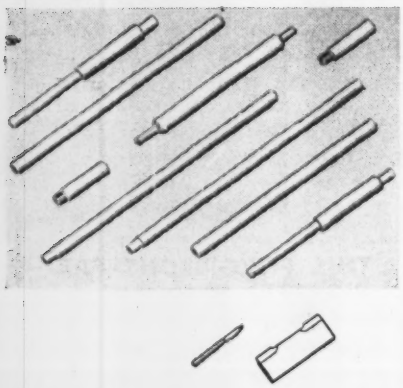

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

California

Food Machinery & Chemical Corp., San Jose, Calif., acquired the Propulsion Engine Corp., Kansas City, Kans., producer of rotary power mowers and gasoline utility engines. The firm will be operated at its present location as part of Food Machinery's Bolens Products Division, Port Washington, Wis.

California

Neville Co., Pittsburgh, will build a plant for manufacture of synthetic resins and solvents in Anaheim, Calif. The first unit will be started at once, with additions expected to be made in a year. Work will be supervised by Robert Ulrich, engineer and western manager.

Delaware

Impex Corp.—automobiles and machinery—has been chartered by the corporation department, secretary of state's office, Dover, Del. Capital of the firm is listed at 1000 shares of stock, no par value. U. S. Corporation Co., Dover, is serving as the principal office.

Delaware

Alloy Precision Castings Co.—engineering, chemical and metallurgical laboratories—filed a charter of incorporation with the secretary of state's office at Dover, Del. Corporation Trust Co., Wilmington, Del., is the principal office.

Georgia

Deering-Milliken Co. Inc., New York, awarded contract to Daniel Construction Co., Greenville, S. C., for a $1 million rayon weaving plant in Thomson, Ga.

Illinois

Illinois Tool Works, Chicago, awarded a contract for construction of an addition to its Elgin, Ill., plant to Charles E. Giertz & Son, Elgin. Cost is estimated at about $150,000. Arthur W. Krieg, Riverside, Ill., is the architect.

Indiana

Emerson Electric Mfg. Co., St. Louis, awarded the general contract for construction of a plant to L. O. Stocker Co., that city. The plant will be used for the manufacture of electric refrigerator motors, etc.

Maryland

Ackerman & Baynes Inc., Baltimore, hitherto engaged solely in the fabrication of light gage metal work, as heating and ventilating ducts and other items for the building industry, is now equipping a section of its plant for heavy gage work and will begin shortly the production of tanks of various sizes for both domestic and commercial users. The company's plant was erected early in 1949. Raymond Ackerman is president.

Maryland

Western Electric Co., Baltimore, has started work on a $2 million addition. The building will be used for manufacture of a new type of jacketed wire. The core is steel and is copper-coated by electrolytic treatment. It will be used as drop wires, such as lead-in connections from telephone lines to household installations. The new building will house two 25-channel electroforming machines which are expected to produce 1750 million feet per year. Such schedule would necessitate the use of 2000 tons of steel wire and 1000 tons of copper, it is said. Including this latest plant, Western Electric has spent some $10 million in expanding its Point Breeze plant during the postwar period.

Maryland

Electro-Motive Division, General Motors Corp., is expanding its plant on Washington boulevard, Halethorpe, Baltimore. The plant is engaged in the repair of diesel engine motors, generators and other locomotive parts. Michael Weber is superintendent.

Maryland

American Can Co. is expanding its facilities at Boston and Hudson streets, Baltimore, by the construction of a train shed and truck loading dock, at an estimated cost of $600,000. The company operates a second tin container manufacturing plant at 2601 N. Howard St., that city, and is completing a third plant at Halethorpe which will produce paper milk containers.

Maryland

Leary Mfg. Co., 608 West Pratt St., Baltimore, specializing in stainless steel fabrication, has occupied some 4000 sq ft at 922 Park Ave, that city, as a branch plant. Edward G. Leary is partner.

Maryland

N. Sheet Metal Co., Baltimore, has moved from 2718 Fait Ave. into larger quarters at 2204 Boston St.

Michigan

National Electric Welding Machines Co., Bay City, Mich., appointed C. J. Harter, Houston, as its representative in Texas.

New Jersey

Turco Products Inc., Los Angeles, bought new facilities at 120 Lister Ave., Newark, N. J. The plant will be used for manufacturing industrial cleaning compounds and as a laboratory center for Turco's Atlantic division. Sidney E. Smith is general manager in charge of the plant. The company also plans to build a plant in the central manufacturing district of Los Angeles.

New York

Woodhouse Chain Works, Trenton, N. J., appointed John H. Graham & Co. Inc., New York, as export representative. Woodhouse, manufacturer of all types of home, farm, industrial, marine and automotive chains, was acquired in 1947 by the Round Associate Chain Companies.

New York

Federal Machine & Welder Co., Warren, O., placed its New York office under Carl de Bourbon, 111 Broadway. Federal was formerly represented by A. A. Probeck Co., New York.

New York

United States Atomic Energy Commission, Washington, awarded construction contracts for four service buildings at Knolls Atomic Power Laboratory to H. K. Ferguson Co., Cleveland. Work will start immediately on a chemical storage building, a liquid metals storage building, a repair garage, and a covered vehicle

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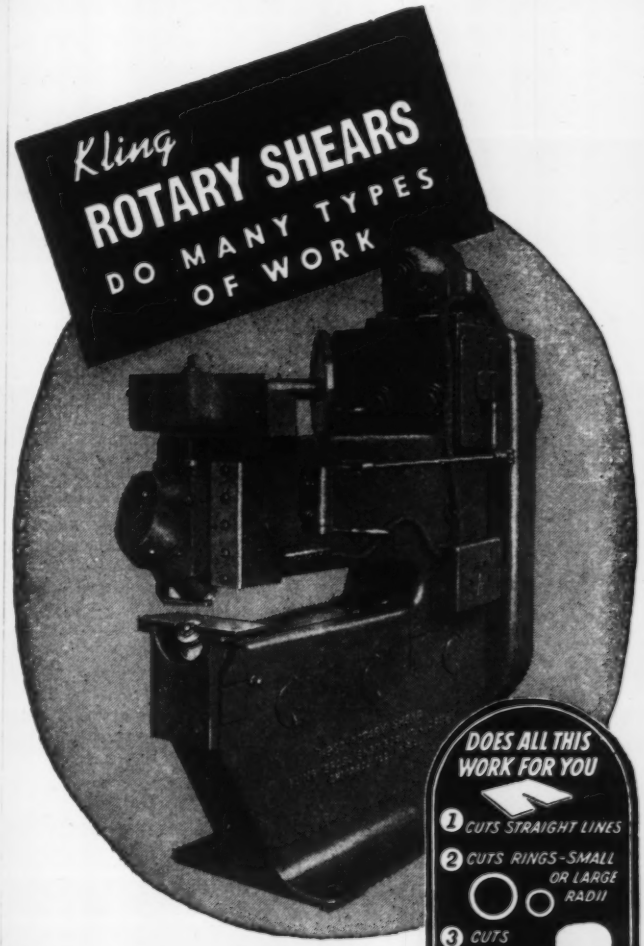

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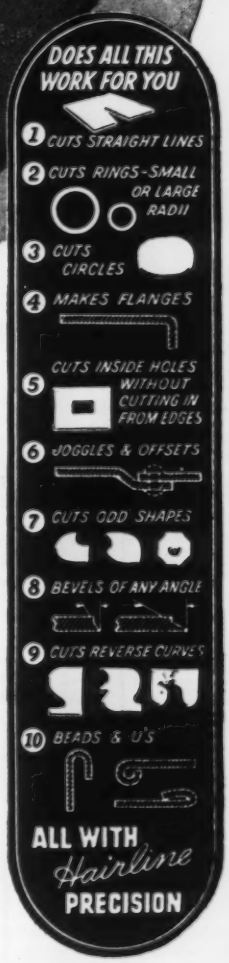
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which will give you specific facts, and specifications. No obligation involved. Users of heavy equipment of Kling Rotary Shears will receive a copy of this Bulletin promptly, on request.

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